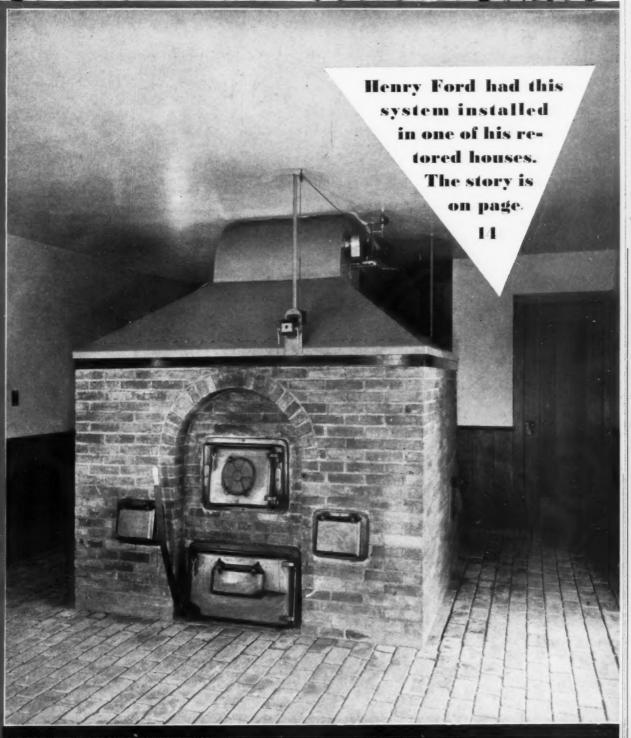
AMERICAN ARTISAN

VARM AIR HEATING . SHEET METAL ONTRACTING . AIR CONDITIONING



ABLISHED

TEMBER 1934

AN OPPORTUNITY AND A CHALLENGE

Millions of American buildings have suffered seriously from lack of normal care during the last five years, because reduced incomes would not permit owners to make the necessary repairs. Today more than 16,000,000 buildings are crying for attention.

The National Housing Act presents an opportunity for you to get the sheet metal work these buildings need, because it makes available amounts of money up to \$2000, even on mortgaged property. It kills the old alibi—"We would like to let you go ahead with the work, but we can't get any money." Repair, alteration and improvement money is now easily available. Therefore, the National Housing Act is a challenge to your salesmanship.

You can't sit back and wait for the business to come to you. You have to go out after it—and it's worth going after, because it's cash business. As the contractor, who will of necessity furnish the estimates, you are a key-man in this program.

Homes need new furnace parts, new furnace pipes, new gutters and downspouts. Kitchens need modernizing. Farm buildings need new roofs. Stores need new fronts and new signs. Factories need new machinery guards, new ventilating ducts, new outside ventilators and repairs to sheet metal buildings.

Republic does its part in this plan to promote business for you by supplying dependable materials—long-lasting Toncan Iron and Enduro Stainless Steel in all the forms used by the sheet metal working industry. These two special metals make every job—new or repair work—a permanent investment that will remain useful long after the property owner has finished the payments on his National Housing Act loan.

Talk to your bank. Get the details of the loan plan. Then go after business with a selling talk built on quality materials and honest workmanship.

REPUBLIC STEEL CORPORATION

GENERAL OFFICES TOUNGSTOWN, OHIO







Test without risk

—See for yours elf why 59 furnace manufacturers adopted the HOLD-HEET SYSTEM... why it is featured by jobbers everywhere.



Stack Control Is the Thing!

Stack Control—the double check—the sensitive, direct control of the fire that prevents up-the-chimney waste and over-runs, saves fuel, saves grates. Stack Control, long the theoretical ideal, made practicable, accurate, powerful, fool-proof, trouble-proof and long-lasting by HOLD-HEET.

The HOLD-HEET SYSTEM is the perfect regulator for furnace or boiler use. It is the most powerful, and will out-perform any other regulator in uniformity of temperature, economy of fuel, safety of

heating plant, and prevention of over-runs. One furnace manufacturer guarantees his furnaces against burn-out for 20 years when they are equipped with HOLD-HEET Stack Controls. A competent heating man, after testing it, said "In view of this development, any man who will put a 'Regulator' without stack control on a plant using any fuel but slow-burning anthracite should lose his license."

Test for Yourself--Know the Facts!

Send in coupon now. See this remarkable Equipment—check its quality—how it's built—its power—its accuracy—how it works. Don't take anyone's word for it. KNOW THE FACTS. Judge after test on your plant————Test at our risk.

RUSSELL ELECTRIC CO. Mírs., CHICAGO, U.S.A.

Cat. No. PU15P
The HOLD-HEET SYSTEM
(Thermostat, Damper Motor, Transformer, a n d
STACK CONTROL, plus
accessories.)

Dealer Price

Cat. No. PU15 HOLD-HEET REGULATOR (Same as

trol.)

Dealer Price.

\$12⁷⁰

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RUSSELL ELECTRIC CO., Mfrs. 342 West Huron St., CHICAGO. Ship the following equipment for 30-day examination and test under your "No Risk" Guarantee: Dealer Cost F. O. B. Chicago
□ Catalog PU15P—The HOLD-HEET SYSTEM \$17.70 □ Catalog PU15—Plain Regulator Set. 12.70 □ HOLD-HEET SYSTEM in Demonstrator Case 10.00
Signed
Firm
Address
City State
☐ Check or money order enclosed. ☐ Ship C. O. D. (Rated firms will be shipped on open account.)

Covering All Activities

Gravity Warm Air Heating
Forced Warm Air Heating
Sheet Metal Contracting
Air Conditioning
Ventilating
Roofing

AMERICAN ARTISAN

With which is merged

FURNACES
SHEET METALS

AND



Vol. 103, No. 9

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Is ANACONDA really the best-known brand?

8 out of 10 say III

Fact No. 1. Anaconda Copper is better known to more people than any other brand.

Fact No. 2. The best-known product is easier to sell, other conditions being equal.

Question: Then why not sell Anaconda copper, the standard of sheet metal quality?

When you push Anaconda Copper,

you make your selling job easier. Also, you provide your shop with sheet or roll metal that is uniformly workable . . . of even purity, gauge and temper.

Many successful sheet metal contractors insist on Anaconda Copper. Leading supply houses carry this well-known quality brand in sheets and rolls, and copper gutters, leaders, elbows and shoes trade-marked ANACONDA.

*Actually 81.59%, according to an impartial consumer survey completed in February of this year.

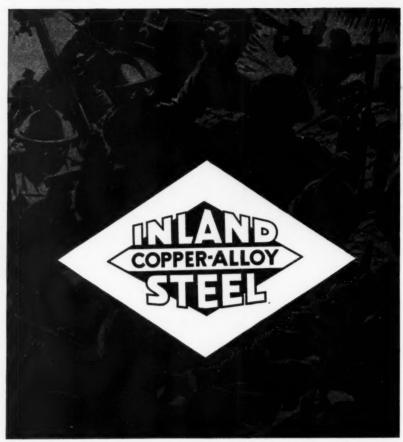


A MODERN FIGHTING METAL

Jights
corrosion

Jights
costs

Jights
FOR SALES



LITTLE by little, quietly, and too often unnoticed the losses from corrosion add up to a staggering total. Fight it with Inland Copper-Alloy Steel.

It fights corrosion—endures longer than any other ordinary iron or steel wherever there is moist air.

It fights costs—reduces the cost per year of service tremendously at only a slight additional first cost compared with ordinary grades of iron or steel. And it costs less than any other corrosion-resisting material—far less than most.

It fights for sales — gives your products the strongest sales appeal of all, most value per dollar, at very little additional manufacturing cost.

Specify Inland Copper-Alloy Steel for roofs, smokestacks, siding, and the like. Use it in your products wherever corrosion can be a factor.

Available in sheets, bars, plates, structurals, any Inland rolled steel product. INLAND STEEL COMPANY, 38 South Dearborn Street, Chicago, Illinois.



Most Enduring

Iron and steel sheets have been ranked according to rust and corrosion resistance under atmospheric conditions by the American Society for Testing Materials ranking based on tests at Fort Sheridan, Annapolis and Pittsburgh. Copper-bearing steel sheets lead the list.

ABLE SERVANT OF THE CENTRAL WEST

Sheets Strip Tin Plate

Plates Structurals Piling

STEEL

Rails

Track Accessories

Billets

Bars

Rivets

The most important MESSAGE ever sent to FURNACE DEALERS

THE FOX FURNACE COMPANY, ELYRIA, OHIO, IS NOW FINANCING THE SALE OF SUNBEAM FURNACES AND AIR CONDITIONING UNITS, IN CONNECTION WITH FEDERAL HOUSING

ADMINISTRATION.

Sunbeam Heating and Air Conditioning Systems for Replacement Are Financed With —No Down Payment—I to 3 Years to Pay—Small Monthly

Payments—Lowest Financing Rates in History— No Delay—No Red Tape—No Mortgage.

Sunbeam Heating Contractors Receive the Full Amount of Their Contract Price Immediately; None Is Held Back—They Endorse Notes WITH-OUT RECOURSE—They Submit No Financial Statement and Do Not Incur Any Financial Responsibility.

Millions of home owners need and want new heating systems. You want to sell them these heating systems. Only one thing has kept you apart—MONEY. The Sunbeam Financing Plan Now Provides the Money.

Sunbeam literature, newspaper advertisements, display posters with which to broadcast this sales-producing financing plan to every prospective buyer are

already in distribution and are producing actual sales—not next week, or next month, or next year—but NOW!

If You Are Endeavoring to Sell Any Prospects Whom This Financing Plan Will Clinch, Wire, Phone or Return the Coupon for the Necessary Forms—Which Are Simple—and Explanatory Literature.

THE FOX FURNACE CO. ELYRIA.O. DIVISION A MERICAN & STANDARD CORP.

SUNBEAM WARM AIR FURNACES AND AIR CONDITIONING UNITS

RETURN THE COUPON

The Fox Furnace Company

Elyria, Ohio

Please send us a complete explanation of the Sunbeam Financing Plan in connection with the Federal Housing Administration.

Also copies of the necessary forms.

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Address .

City and State

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The Revere Crier



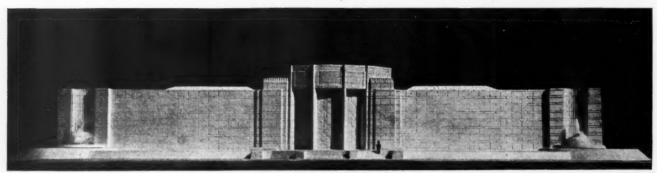


Illustration of architects' model

Treasures

are housed in this magnificent new Art Museum overlooking Puget Sound in Seattle. (Bebb & Gould, architects; Peder P. Gjarde, general contractor; Builders Sheet Metal Co., Inc., sheet metal contractors . . . all of Seattle.) Priceless collec-

tions of jade, oriental porcelains, paintings, and art books will be kept in this building. To assist in keeping the museum absolutely weather-proof, Revere sheet copper was specified ... 12,000 pounds, for roofing, flashings, and skylights. Modern-day architects and contractors know the advantages of Revere sheet copper ... it is workable, weather-proof, attractive, permanent ... and economical. It's readily available, too, at leading sheet metal distributors.



Batten seam copper roofing was used on the new Post Office at Columbus, Ohio. (John Weenink &

Sons Co., of Cleveland, sheet metal contractors.) This is a unique installation, due to the covered wood columns running through the saw-tooth construction. 45,000 pounds of Revere sheet copper were used. For big or small installations, Revere sheet copper will add to your profits. Use it for roofing, flashings, gutters, leaders, leaderheads, cornices, valleys, skylights, etc.

"Coppersides"

She was known as "Old Ironsides" because of her indomitable fighting spirit. But actually, she was "Old Coppersides." Her

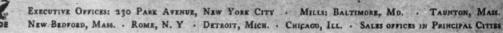


hull, originally sheathed with copper rolled in England, was resheathed with copper rolled at Paul Revere's original mill. This was back in 1803, the year after Paul Revere had established the first copper rolling mill in the United States at Canton, Mass. Today, Revere Copper and Brass Incorporated, a continuation of Paul Revere's firm, carries on the leadership which he established more than 130 years ago.

See our exhibit in the Paul Revere House, Colonial Village at A Century of Progress.

Revere Copper and Brass

INCORPORATED



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WHAT'S THE ANSWER?

We want you to do some heavy thinking—so here are a few questions to ponder over:

(1) How many new automobiles do you see on the streets of your town every day? (2) How many new electric refrigerators were installed in homes in your town since April 1st? (3) How many worn-out, cracked, gas-and-smoke-belching, fuel-hogging furnaces need replacing in your community NOW? And——

(4) How many of these decrepit furnaces will YOU replace this Fall?

Men! It's time to quit telling yourself "They have no money." It's time to actually INSPECT as many furnaces as possible and show some people the actual DANGER of "making the old furnace do another season" and others . . . the real economy of a NEW WEIR.

Do a real job of selling! The fact that automobile, refrigerator, and washing machine manufacturers and dealers are finding 1934 the best year since '29 PROVES that people DO have money to spend and that financing is easier. More than that—they can now borrow funds thru the Federal Housing Act to improve their property.

And it is time to be selling a line of furnaces so complete that you can "Meet Competition" on "Price" jobs or offer quality that is in a class by itself-including "Air Conditioning" installations for the finest of homes.

That's the WEIR line. There is hardly room here to present the whole story fairly. We want you to know HOW and WHY the WEIR line is desirable for you to sell. We want you to know HOW WEIR furnaces are made and WHY. We want you to know how we help you sell. We want you to make money, too, on the jobs you sell. Just sign the coupon below (or clip it to your letter—or bill-head) and you will get the best furnace proposition in the country—and you'll be headed back toward "Happy Days." Do it NOW!



PEORIA, ILLINOIS



DO YOU KNOW THAT MEYER-WEIR OFFERS

a most complete line of heating, cooling and air-conditioning equipment for coal, gas or oil?

WEIR Steel Furnaces in "A," "M" and "600" series.

The MEYER Gas-Fired Air Conditioner.

WEIR Conditioned Air Units.

The MEYER Fan-Filter.

The MEYER Gas Furnace.

The MEYER Washed Air Conditioner.

Ask for Complete Bulletin A

Please send complete details on the Meyer-Weir proposition.

Name

Address

??????????????????????????????????



Plenty of Chances in Laundries for YOU

to make a

CLEAN-UP!

Just look around any laundry or dry cleaning plant... you'll pick up a lot of jobs!

HERE'S a suggestion that has helped many a sheet metal contractor to develop sales from new customers.

The laundrymen in your town are well sold on Monel Metal. They buy a lot of Monel Metal machinery. They like it. They depend on it. It has proved to them that Monel Metal does not rust. That it's strong. That it wears for years. That it stays smooth, and

splinterless and thus can't harm the clothes.

They know they ought to put in Monel Metal; that there are places in their plants that are causing them trouble which Monel Metal could cure. Here are a few of them:



The Acorn Sheet Metal Works, Chicago, had a nice job when they made these 30 Monel Metal trucks for the American Linen Supply Co., Chicago, Monel Metal makes the most durable and satisfactory trucks. Call on the laundries in your territory and get your share of this business.

In Laundries

Trucks, Table Tops, Chutes, Aprons, Soap Tanks, Utensils (such as buckets and dippers), Lining for Hand Tubs, Sorting Tables, Sinks.

In Dry Cleaning Plants

Trucks, Table Tops, Spotting Tables, Utensils, Dye Vats, Sinks, Ventilating Hoods.

Tear out this list. Check over these pieces of equipment, with every laundry owner or dry cleaner you can reach. If he owns a Monel Metal washer, you won't need to "argue" with him. He knows Monel Metal is good.

Prove to him that you are good, too. A craftsman. That you understand how to handle Monel Metal and can turn out workmanlike jobs.

You'll pick up profitable business among these plants. Try it. Send for our free "Monel Metal Working Instructions." Write today.

THE INTERNATIONAL NICKEL CO., INC.
67 WALL STREET NEW YORK, N. Y.

Monel Metal



Monel Metal is a registered trade mark applied to an alloy containing approximately two-thirds Nickel an one-third copper. Monel Metal is mined, smelted, refined, rolled and





Dry cleaning plants as well as laundries are good places to get sheet metal business in Monel Metal. Note the five Monel Metal dye tanks made by the Pico Metal Products Co., Los Angeles, Calif., for a dry cleaning and dyeing plant. In large dye-houses, Monel Metal is the standard material of construction for dye tanks and equipment.

When the Home Owner . Asks Questions



Moncrief Gas Air Conditioner



Moncrief Aristocrat Air Conditioner



.... You can satisfy him in every particular when you sell

MONCRIEF FURNACES

Is this furnace modern? reasonably priced? economical of fuel? Can I burn any kind of fuel? Can you give me the type of furnace I need? Can I have air conditioning, or add it later?

Yes, you can answer to these and all other questions that pertain to better home heating.

The completeness of the Moncrief line is a distinct asset to you. It is designed and built Moncrief Series "S" Steel Furnace right, priced right. Moncrief Sales Helps and our Engineering Department are also features of our service that make the Moncrief Proposition worth investigating.

Write for Details



3471 E. 49th St., Cleveland, Ohio

We supply everything used on a warm air heating job







Moncrief Series "B" Gas Furnace



MONCRIE

MILES Junior Air Conditioner

Delivers more air conditioning for little money than anything else made. Every furnace heated home a prospect. A great money maker for furnace dealers. Write for new descriptive circular.



(To Dealers)

\$68.30 Complete with Controls



We
STREAMLINED
the inside of
this Furnace
and made it
50% More Efficient

A Furnace with a
Dozen Great New
Improvements - - Easy to
Sell - - Sure to Satisfy

For 20 years autos were built like buggies . . . and for 20 years furnaces have been built like stoves.

Now, however, U. S. Pressed Steel engineers have dared to discard obsolete ideas of furnace design, and create an entirely new warm air heating plant, 35 to 50% more efficient.

Balanced, Streamlined Body

Note that the body is located in the center of the casing, providing larger space for circulation of air entirely around body . . . even between the pouches. Note, too, that body is smooth and straight, streamlined to accelerate the circulation of air.

No bulges or bumps . . . no blanket of hot air at bottom to retard the air flow. The bottom of the body is cool and the top is hot, creating a powerful draft over the large heating surfaces of combustion chamber and radiator.

Double Size Radiator

The massive steel radiator com-

pletely encircles combustion chamber, and is separated to permit flow of air entirely around radiator. This combined with large, efficient combustion chamber, more than doubles the area of heating surfaces.

The U. S. Steel Furnace is permanently leakproof, double arc welded into practically one solid steel unit. The U. S. is the universal furnace, equally efficient for coal, coke, gas, or oil . . . ideal for air conditioning installations.

Sells, and Gives Satisfaction

This modern furnace does a better job of home heating . . . sells more readily . . . and gives more enduring satisfaction to the home owner. It is the furnace of choice for the progressive dealer . . . one that will make money for him . . . and help him to enhance his reputation and prestige.

Write today. Let us explain the U. S. dealer proposition, and show you how much easier and more profitable it is to sell this truly modern furnace.



The straight steel body of this furnace is double arc welded, permanently leakproof. Clamps to top with heavy, die forged bolts. No cement, packing, or gaskets. Joint is permanently air tight.



Large size Reversible Return Flue Radiator is made of the same genuine fire box quality open hearth steel as used in combustion chamber and body. Radiator entirely encircles combustion chamber, and is designed so that air passes entirely around.

U. S. Pressed Steel Products Co.

Kalamazoo, Michigan

Volume 103



Number 9

AMERICAN ARTISAN

Wild Claims

The warm air heating industry, in spite of its age, has been singularly free from one insidious factor of American business—

namely, those industrial "riders" who enter an industry when it shows signs of expansion and through the triumvirate of wild claims, cheap goods and cut-throat prices destroy the market built by the conservative developers and sour the public on the proposition.

Now, however, as we enter the 1934-1935 heating season, we can see signs indicating the approach of these "riders." We are the sponsors and developers of domestic air conditioning. It has been our development and constitutes a legitimate field for our efforts. So long as air conditioning remained only a catch-word the "riders" were content to let us stand the expense and tribulations of development work. But now that the field looks promising, they are hedging in.

The public has been lead to think of air conditioning as furnishing ideal indoor conditions; in terms of June days, heating and cooling, trouble-free systems, as a scientific development with just a hint of mystery. Some of this thought has originated within our own industry. Most of it, though, has come from uninformed or semi-informed, well-meaning persons who know little or nothing actually about the problem of air conditioning, but like to see their name in print.

The atmosphere of mystery which has been thrown around the idea has made an ideal breeding ground for the "riders" who make wild claims and care nothing for the business other than collecting the selling price. These "riders" have discovered that a home owner can be sold a humidifier which, placed on the library table of a three-story house, will automatically keep all the air in the house at the scientifically determined percentage of moisture.

"Riders" have found that a fan, which can't possibly swirl a cloud of cigarette smoke, can be sold the unsuspecting owner as a pressure type, cure-all for his heating system. They have found the same things true of controls, filters, furnaces, air conditioning units, cooling apparatus, to say nothing of those "riders" who sell complete systems without knowing the first principle of air handling.

Perhaps the thing for us to do is to back-track toward conservatism. A conservatism of statements made during the sale, a conservatism of claims made for our apparatus, our design, our systems in order that the public will actually get more than they pay for.

There are many ways in which this need for conservatism makes itself manifest. Unknowingly or through carelessness, even the best of us have been making statements which are difficult to prove "in court." We guarantee so many air changes per hour (though our fan may run intermittently); we offer controls as complete nurses for a heating system (though we know that every control system needs attention and experiment before it is right); we guarantee comfortable interiors (yet only now are we beginning to pay attention to such problems as stratification, cold areas near windows, cold floors, uneven distribution of air and temperature); we give blanket guarantees of 70 degrees throughout the house (though we know that one thermostat can't possibly do the job in many houses and our balancing and air delivery is oftentimes faulty); we sell the owner the equivalent of June weather (and install pretzel piping in the basement which can be remedied only by removal).

Cost Surveys

One of the pressing tasks confronting individuals, associations and code authority committees is the task of gathering cost

and overhead data on which to base future decisions on fair prices for work let to contract. Considerable progress has been made, particularly in Michigan and Wisconsin, where surveys have been completed or are in process.

We publish in this issue a resumé of the reports of these two states. The Wisconsin survey is unusually complete and gives us some excellent figures for study. We call reader's attention to this report and suggest that the costs shown be studied carefully for the benefit of every man in the business. The ups and downs in volume of work, the proportion of firms using three different methods of applying overhead and the percentages of overhead indicated for each method are especially instructive.

Michigan's survey is still in compilation form, but the report sheet adopted gives an excellent idea of the thoroughness used to get actual and not fancied figures. With such a complete report sheet undoubtedly Michigan contractors are due to unearth some interesting and valuable guides to future conduct of business.



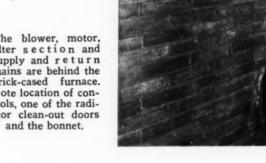
The forced warm air heating plant is located in this shed which stands just outside the back door of the old Penning-ton house. The tunnel carrying the supply and return air mains enters the house just off the corner of the wing shown. New weather-board-ing, gutters, downspouts, roof, foundation were applied on the old hand-hewn fram-ing. An old fashioned flower garden starts in the foreground.

Henry Ford Buys Forced Warm Air For One of His Restored Homes

ENRY FORD'S interest in things old-vehicles, furniture, dance steps, music, mechanical devices, old buildings-has become as much of a household word as has his astounding ingenuity as a modern manufacturer. His more prominent displays, such as the museum of transportation at Dearborn, Michigan, or his Colonial village, are well known. Not so well known, perhaps, are other evidences of his collectorship, such as his numerous examples of building restoration.

A typical example of this building restoration, and an example which intimately touches our own field of warm air heating, has recently been completed some sixty miles from Detroit. Near the town of Tecumseh, Michigan, there was built about the year 1853 a residence for a man named John Pennington. The house was built in the manner of the day-substantial, hand-hewn

The blower, motor, filter section and supply and return mains are behind the brick-cased furnace. Note location of controls, one of the radiator clean-out doors and the bonnet.

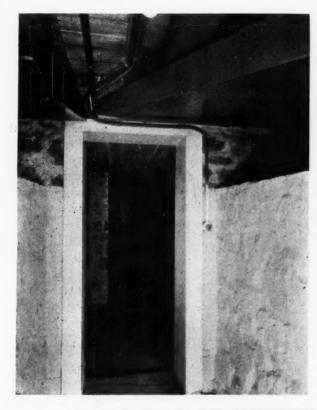


framing, excellent architecture of good anticedents, set in a grove of large trees, far back from the highway.

The house passed through the usual changes from that day to this, deteriorating slowly until only the sturdy framing remained in first class condition. Three years ago Mr. Ford began to buy land around Tecumseh for the purpose of establishing a large scale farming project. It may be of more than passing interest to note that this farm is operated on a typical Ford basis—thousands of acres thrown together, removal of fences so that mechanical

farming, using the latest developments in farm machinery, can be operated economically. The principal crop is soy beans which are processed and from the resulting products many articles useful in manufacturing and as food are

In Mr. Ford's opinion the old Pennington homestead was too excellent an example of 1850 architecture to destroy and accordingly the old house was stripped of all weather worn material and on the old framing new floors, a new foundation, new sheathing and siding, a new roof, copper gutters and downspouts, new



All trunks and branches are 4 inches deep. A 4-inch strip was nailed along all joist bottoms so that when the basement is finished all ducts will be behind plaster. This photograph shows the general construction.

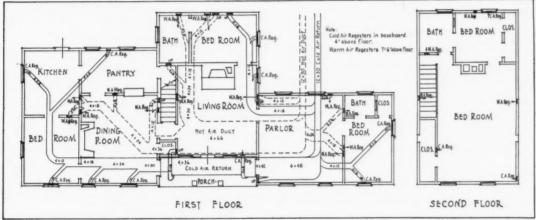
In center — Piping plan of the job showing duct sizes, return air system, supply, and distribution of air to boots and risers.

Below—Looking into the tunnel toward the furnace. The duct at the left is the warm air, that at the right the return. Note duct construction and branch takeoffs on warm air duc:. posed of heavy oak planking and the floor is sand brick, set in a sand-mortar bed. The furnace casing, to conform with this floor, also uses sand brick set with raked joints. Visitors entering the shed find it difficult to appreciate that in this setting there is a modern forced air heating plant.

As might be appreciated such construction introduced numerous problems. Practically everything had to be designed and built especially for the installation. The furnace is designed and built for this particular installation.

The blower is especially designed for the job to be done. And the entire heating system is replete with unusual and interesting features.

A local heating man handled the installation and co-operated



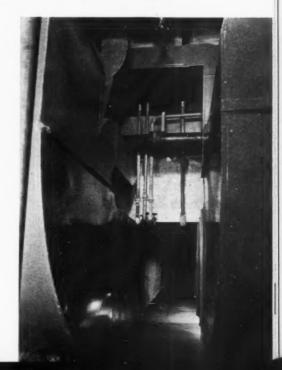
doors and windows were built. When completed, genuine Colonial furniture from other Ford collections was placed in the rooms with wall paper, rugs, carpets, fireplaces of the period until the house stands today practically as it did in 1853.

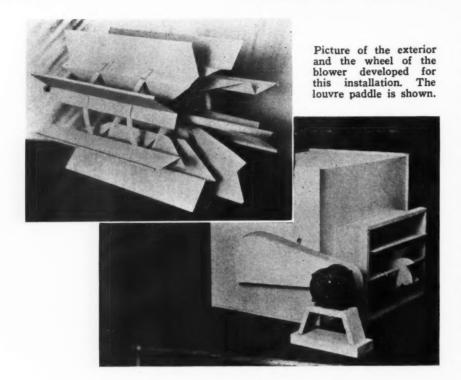
Mr. Ford liked the old house and its lovely setting in the trees and gardens and since the remodeling he is accustomed to visit the place at frequent intervals. Accordingly the house must be heated. This presented a problem, because modern heating systems had not been thought of when the house was built. There could be no place for such things as radiators or even furnaces in

the house, so a plan was worked out in which a thoroughly modern forced warm air system was installed with the furnace, blower, filters in a shed outside the back door. Warm, clean air is introduced into the rooms through registers in the side walls and returns in the baseboard.

The allegiance to 1853 appearance was carried to the ultimate degree by specifying that the furnace should not look too modern and if possible conform with the other construction around the house. To meet this specification a brick set furnace with such mechanical devices as the fan, motor, filters, etc., placed behind the furnace was built. The shed is com-

in designing the furnace and blower. In the design and construction—and the testing of the





equipment after construction the Ford laboratory and laboratory engineering staff played a major part. What came of this co-operative effort is indicated by the detail drawings which show the construction of the furnace and the blowers.

Special Equipment

The furnace consists of a steel drum of welded construction and using customary fire brick lining for the combustion chamber. The feed pouch is somewhat longer than usual in order to get through the brick housing. The ash pit section is also steel, integral with the drum and has welded angles to carry the fire brick and the grates of center dump design.

Off of the drum there are three radiators—one on each side and the third at the rear. Each side drum has a vertical baffle at the center line. Gases of combustion enter the forward section of the side drum at the top from the combustion chamber, pass down into the rear section and upward

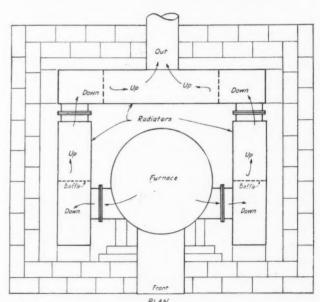
and into the rear radiator where another vertical baffle directs the flow down and then up into the smoke pipe. The gas travel is therefore approximately 9 feet from fire to smoke pipe throat on each side of the furnace, giving a double capacity, or 18 feet.

The canopy of the furnace is galvanized iron shaped like a pyramid with the top cut off ending in the one large supply main which passes through the tunnel. This canopy is insulated with 2 inches of insulating fill between the two walls of metal. The inside shell, which is directly above the drum and radiators, is ½-inch steel, while the outside metal is 24-gauge galvanized iron.

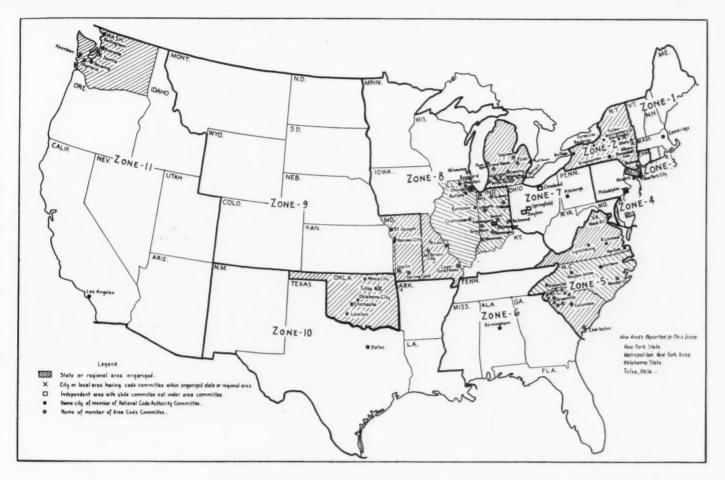
Blower Design

The blower as shown by the photographs is also specially designed. The general type might be called modified paddle wheel in that the blades are both wide and long and intended to operate at slow speed. The blower outlet, as shown in one of the photographs, is equipped with a bypass damper which opens when the fan stops and thereby provides a lower resistance pass, to facilitate circulation by gravity when the fan is idle. Operation of this damper is controlled by (Continued on page 61)

Radiator Radiator



At the left is a cross section through the furnace showing construction of drum and rear radiator. At right—plan drawing of furnace showing proportionate sizes of three radiators, radiator location, baffles, and the brick housing.



Survey of Code Organization Progress

August issue of AMERICAN ARTISAN showed regions and local areas where code authority committees have been set up. Since the August issue, additional reports have been received indicating that the states of New York and Oklahoma and Zone 2, comprising Metropolitan New York area, have been organized with necessary committees. These additional areas are indicated on the map shown with this article.

For the State of Oklahoma, the following men have been elected to serve as the Oklahoma State Code Authority Committee — J. W. Tidwell, W. O. Moran and B. F. Stephens of Tulsa; Charles Grey, C. W. Wilson and J. C. Leister of Oklahoma City; A. J. Arendell of McAlester; Pat Brandon of Lawton; E. DeHart of Chickasha; John Tooley of Enid; Guy Connel of Ponca City.

A local code authority commit-

tee for the city of Tulsa and its trade area has been appointed as follows: E. C. Upton of Upton Sheet Metal Works; Harold Looney of Looney's Sheet Metal Works; Forest Shoemacker of The Air Conditioning Corporation of Tulsa; D. A. Harper of Harper Sheet Metal Works and J. L. Grey of The Standard Roofing Company.

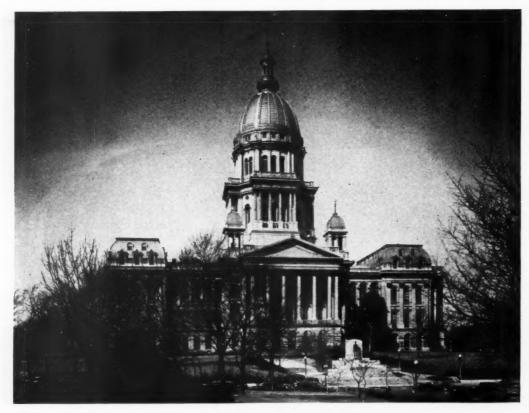
A tentative budget to cover the expenses of the Local Code Authority Committee of Tulsa has been set up as follows: station- * ery and postage-\$180.00; miscellaneous expense-\$200.00; office rent-\$300.00; services for Local Code Authorities-\$800.00 (based on \$2.00 per hour for time spent in meetings); secretary's salary-\$2,080.00; clerical help-\$625.00; office supplies—\$60.00; office equipment-\$120.00; telephone, etc., \$125.00, making the total budget for the year-\$5,000.00. Funds for this expense

are to be raised by assessing contractors one-half per cent to one per cent of their monthly volume of business.

Zone 2, comprising all of New York, with the exception of Metropolitan New York area, has set up a state and zone code authority committee consisting of the following individuals: Frank F. Harmon, Chairman, The Lennox Furnace Co., 400 North Midler Ave., Syracuse; Clarence R. Meyer, Jos. Meyer and Sons, Inc., 569 Genesee St., Buffalo; George Ballard, 10 Gunnison St., Rochester; D. V. Quackenbush, 133 Washington St., Gloversville; James F. Keays, United Roofing Co., 429 Orange St., Albany; H. A. Daniel, Secretary, Atlas Roofing Co., 134 Washington St., Newburg.

The election of this Code Authority Committee for Zone 2 has been duly approved by NRA.

(Continued on page 62)



General view of the Capitol with the new dome described in the June Artisan and the wings described here.

Below—Closeup of one of the wings taken before new metal was applied showing condition of the old roof. Also shows the general layout of the mansard, dormers, flat deck and cornice.

Springfield, III., Capitol's Wings Recovered With Copper

IN THE June issue of AMERICAN ARTISAN an article appeared describing the fabrication and application of zinc to the dome of the capitol at Springfield, Illinois. In addition to this contract a second contract handled by Henry Reuter & Son Company of Kankakee, Illinois, covered the repair and re-covering of the two large wings which adjoin the dome section of the building.

These two wings were in very bad condition. The original construction consisted of sheathing on the structural frame covered with a stamped copper shingle.

In addition to the recovering of the two wings, the Reuter contract also included the application of a 20-year bonded roof on the flat decks of the two wings. There was also included the application of batten seam roofing on the pitched roofs which join the wings to the dome section,

the re-roofing of the small towers at the front and erection of a skylight over the general assembly wing at the rear of the building.

For the metal work some 66,000 pounds of copper were used. All this copper was lead coated with 25 to 30 pounds of lead coating per hundred square feet of copper. All the lead coated copper was

delivered in flat sheets at the capitol and fabricated in a field shop. All the roofing, flashing, cornices and gutters were formed in 16-ounce copper. Conductor pipe was formed in 18-ounce and the skylight in 24-ounce.

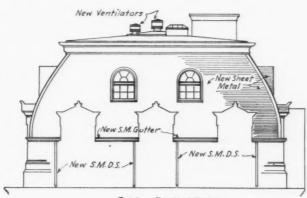
Mansards

In many ways the renovating



of the mansard portions of the two main wings constituted the most interesting feature of the contract. As stated these portions of the building were in very bad condition. The old copper shingles were therefore all taken off and discarded. The sheathing was re-nailed where still sound and where rotted new sheathing was laid. This gave a sound, tight foundation to work on. Then 1 1/8-inch by 3-inch wood strips, like battens, were nailed over the sheathing horizontally on 15-inch centers from one end of the mansard to the other. In between these strips 1-inch board insulation was placed. The manRight — Elevation of mansard
showing new copper application,
design of dormers
and their facing,
cornice and new
gutter.

In center — Plan of one of the wings showing extent of copper contract and location of the various dormers.



END ELEVATION

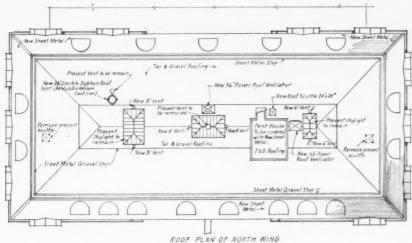
breaking exactly on centers on the sheets below. These sheets were attached by means of five cleats using two nails through each cleat into the nailing strips

Where the mansard sheets ran into the top and sides of the upper dormers the sheets of the dormer and of the mansard were seamed into one each other. The faces of the upper dormers were covered with moulded copper stamped in six pieces. Each side consisted of a complete face section with the center panel sunk

below the face of the outer moulding. The six pieces when assembled cover practically all the face area other than the area of the glass.

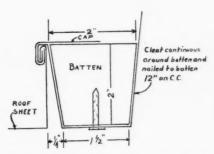
Gutters

The wings consist of a flat roof having a concealed gutter on all four sides. In construction a copper gravel stop was brought out from under the built up roofing and locked at the back edge of the gutter with the gutter sheet. The gutter was formed in one piece of copper with the



sard was then ready to be recovered by copper.

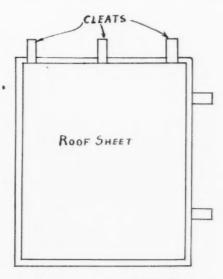
In place of the stamped shingles used previously, this year's copper consisted of sheets 12½ by 17 inches in size edged for a ½-inch seam. These small sheets were applied to resemble shingles with the top (the 12½-inch side) and bottom edges striking the centers of the wood strips and with all perpendicular seams



Detail of a batten showing method of applying pan sheet and cap.

(see sketch). The adjoining sheets with cleats were turned into a flat lock and leaded; then pounded flat to secure a tight seam without any soldering.

It will be noted on the roof plan for a wing and on the photographs that all mansards are cut by several dormers. These dormers are cut through at two . levels-a round-topped dormer at the upper level and a larger and peaked dormer at the bottom of the mansard. The top, sides and face of the upper dormers were covered with new metal. lower dormers are built of terra cotta, but the roof and sides were covered with copper out to the face. The copper sheets were attached to continuous cleats bolted to the terra cotta with screw anchors.

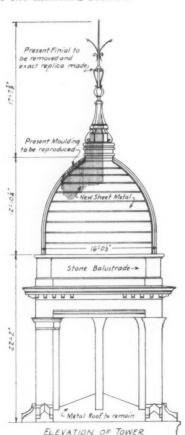


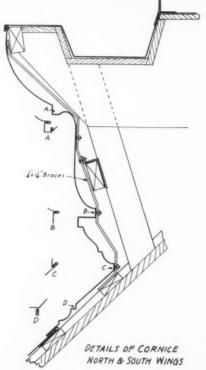
Detail of a mansard sheet with location of cleats which hold the sheet to the horizontal ribs.

scam along the outside edge of the cornice. Below this edge the cornice was built up from four pieces of metal locked at points as shown in the detail. A fifth piece connected the lowest vertical section of the cornice with the metal of the mansard roof.

The face of the cornice was carried on strap iron lookouts as shown and the straps, in turn, were fastened at the top, middle and bottom to horizontal wood nailing strips. The five sections comprising the face and foot of the cornice are stamped enrichments formed to a specified pattern in the field shop.

The old cornice and gutter on each wing had four outlets—one at each corner. These outlets were concealed under the hips and carried the water down to the gutter at the base of the mansard. The Reuter company deemed it advisable to make expansion joints in both gutter and cornice at 30-foot intervals and this made it necessary to add four additional conductor pipes which had to be exposed on the outside of the mansard section.





Detail of cornice around flat deck showing sections and seams.

As a part of the contract all old conductor pipe was replaced by new 7-inch, 18-ounce round corrugated copper pipe. This pipe was formed in the field shop on a 10-foot brake from flat metal. More than 1,200 feet of this pipe was required in the contract.

Metal Roof

Between the wing sections and the dome section there is a two way pitched roof which was recovered in copper, batten type. The old metal was removed and the sheathing reconditioned. New 2 by 2-inch battens on 21-inch centers were then nailed over the roof. Sheets 26 inches wide and 9 feet long were fabricated and flat locked to the battens without solder.

At the two front corners of the

Left—Detail of one of the small domes. The finial has fabricated on the job. The roof sheets are identical with those on the mansard. A flat-locked metal deck is used inside the tower bases.

Right—Cross section of large skylight showing assembly through hips and bars and plan of assembly. Tie rods with turn-buckles are used for stiffeners.

dome section there are small towers. The lower part of the towers is masonry with a metal deck inside the columns. This metal deck was sheathed with lead coated copper sheets, 14 by 20 inches cleated and soldered.

The roofs of these two towers were covered with the same sized small sheets as the mansard roof. The application was identical excepting that no insulation was used between the battens. Finials, as shown on the photograph, and 18 feet high, were fabricated by the Reuter company.

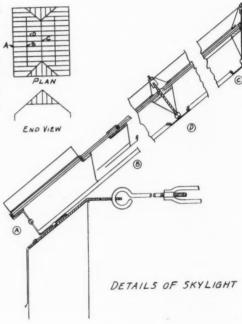
Skylight

An interesting part of the contract entailed fabrication and erection of a 20 foot by 22 foot skylight over the General Assembly in the rear wing of the building. This skylight is entirely self-supporting, there being no structural steel frame.

The surface is entirely glass supported by 24-ounce formed bars as shown in the skylight detail.

Built Up Roof

Each wing has a large flat deck on the top as shown in the photographs. The old roofing was removed and the under sheathing reconditioned. Then a 5-ply pitch and gravel roof was laid without any insulation.



	Selling Price	Material	Labor	Amount of Expense	First Cost
Year 1930	\$1,444,173.52	\$ 715,692.28	\$384,461.10	\$304,786.49	\$1,397,554.38
1931 1932	1,085,972.08 942.321.27	543,083.49 396,185,70	279,644.97 178,865.25	269,068.04 222,928.22	1,096,885.7 787,942.6
1933	1,235,428.04	336,390.74	140,307.74	178,755.66	655,406.9
	\$4,707,894.91	\$1,991,352.21	\$983,279.06	\$975,538.41	\$3,937,789.7
		I I O I II a II	d Loss Repo	F 1	
	Number of firms	Volume of Business	Profit	Loss	Per Cent
1930	of firms 26	Volume of Business \$934,296.55		Loss	7
1930 1930 1931	of firms 26 12 17	Volume of Business \$934,296.55 509,876.87 315,074.74	Profit	Loss \$ 17,270.93	-3.3 14.66
1930 1931 1931	of firms 26 12 17 22	Volume of Business \$934,296,55 509,876,87 315,074,74 770,879,34	Profit \$ 65,235.29 46,230.95	Loss	-3.3 14.66 -7.3
1930 1931 1931 1932	of firms 26 12 17 22 15	Volume of Business \$934,296.55 509,876.87 315,074.74 770,879.34 92,474.67	Profit \$ 65,235.29	Loss \$ 17,270.93 56,357.30	$ \begin{array}{r} 7 \\ -3.3 \\ 14.66 \\ -7.3 \\ +16.3 \end{array} $
1930 1931 1931	of firms 26 12 17 22 15 25 19	Volume of Business \$934,296.55 509,876.87 315,074.74 770,879.34 92,474.67 849,864.60 701,263.86	Profit \$ 65,235.29 46,230.95	Loss \$ 17,270.93 56,357.30 66,401.79	$ \begin{array}{r} -3.3 \\ 14.66 \\ -7.3 \\ +16.3 \\ -8.0 \\ +2.5 \end{array} $
1930 1931 1931 1932 1932	of firms 26 19 17 22 15 25	Volume of Business \$934,296,55 509,876,87 315,074.74 770,879,34 92,474.67 849,864,60	Profit \$ 65,235.29 46,230.95 15,081.25	Loss \$ 17,270.93 56,357.30	$ \begin{array}{r} 7 \\ -3.3 \\ 14.66 \\ -7.3 \\ +16.3 \\ -8.0 \end{array} $

If IGHLY important among the many things which must be done to make the Code of Fair Competition for our industry effective, is the compilation of cost figures.

In order to say whether or not a certain price for a job is too high or too low, the local administrative or compliance board must know what is a fair and average set of cost figures for its particular area. While our industry has been complaining for years about the firm which prices too low, we have never set to work to determine what is a fair and average set of cost figures.

Under the code we also have to know what overhead costs are for each area under the jurisdiction of a compliance or administrative board. To establish such a figure it is necessary to determine what are the overhead cost figures for every type of shop in the area—large, medium and small shops; furnace heating, sheet metal, roofing, ventilation exclusively; combination shops—and so forth.

The compilation of these necessary figures is a real task. Such figures cannot be established by guess or by a survey of one shop of each group. These figures must be established by a thorough survey of all the shops in the code area.

Progress toward compilation of these figures is being made in several parts of the country associations are actively behind the project and have made excellent progress.

Cost and Overhead Figures Shown in Wisconsin's Survey

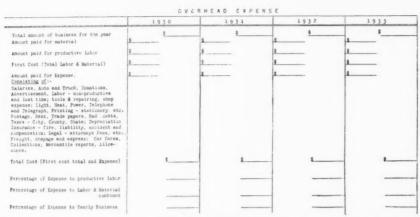
We take pleasure in reporting here the figures established by the Sheet Metal Contractors Association of Wisconsin. One illustration shows the survey form used by the association. These forms were mailed to every known contractor in the state. From the returns a complete analysis of the business of forty firms has been prepared and is shown here.

In submitting this report Paul L. Biersach, secretary, says: "Our survey includes forty firms of various size. The survey includes the four years of 1930, 1931, 1932, 1933. The selling price, volume of business, material, labor, amount of expenses, first cost and expense are all shown. Profits made by some firms are also shown as are some losses, all totaled.

"Percentages of expense to labor, to labor and material, and volume of business or selling

METHOD OF APPLYING OVERHEAD (Wisconsin Survey)

		1930			1931		1932			,,	193	3	
			-										
Percentage of Overhead Used	No. of Shops Applying Over- head on Produc- tive Labor	No. of Shops Applying Over- head on Material and Labor	No. of Shops Applying Over- head on Volume of Business	No. of Shops Applying Over- head on Produc- tive Labor	No. of Shops Applying Over- head on Material and Labor	No. of Shops Applying Over- head on Volume of Business	No. of Shops Applying Over- head on Produc- tive Labor	No. of Shops Applying Over- head on Material and Labor	No. of Shops Applying Over- head on Volume of Business	No. of Shops Applying Qver- head on Produc- tive Labor	S do side	Applying Over- head on Material	No. of Shops Applying Over- head on Volume of Business
0 to 20%	2	15	19	2	10	14	0	4	12	0		8	14
20 to 30%	3	3	12	1	9	12	0	7	11	2		4	9
30 to 40%	3	7	2	3	6	7	2	9	8	3		7	8
40 to 50%	3	2	2	4	8	2	3	3	3	0		6	5
50 to 60%	6	6	1	3	1	1	2	6	0	3		5	1
60 to 70%	3	2	1	2	1	3	3	2	2	2		4	1
70 to 80%	1	0	1	3	0	6	2	2	2	0		0	0
80 to 90%	5	0	0	6	2	0	2	0	0	3		3	29
90 to 100%	1	0	0	1	1	0	5	1	0	2		1	0
00 to 110%	1	0	0	0	1	0	1	0	1	1		1	0
10 to 120%	4	0	0	2	0	0	1	1	0	0		0	0
20 to 130%	1	0	0	0	1	0	2	1	0	2		0	0
30 to 140%	0	0	0	4	0	0	0	0	0	2		U	0
40 to 150%	0	0	0	0	0	0	0	0	0	3	20.000	0	0
50 to 160%	0	0	0	1	0	0	0	0	0	6 between 1	50-200	0	0
60 to 170%	0	0	0	2	0	0	4 between 160-180	0	0	0		0	0
80 to 190%	1	0	0	0	0	0	0	0	0	0		0	0
90 to 200%	0	0	0	0	0	0	0	0	0	0		9	0
00 to 250%	0	0	0	0	0	0	7 over 200	0	0	3		9	0
50 to 300%	0	0	0	0	0	0	0	0	0	0		0	0
Over 300%	2	0	0	0	0	0	1	0	0	20		0	0
Over 800% General Average	0	0	0	0	0	0	1 over 800	0	0	U		U	
per classification	55%	34 %	19%	100%	38.3%	26%	147%	53%	33 %	127%		51%	33%



This is the form used in the Wisconsin survey. From the returns the figures shown in the tables were prepared.

price are shown with the number of shops and below are the percentages (average) for the same headings."

In presenting this tabulation we feel that readers will be interested because of the completeness of the figures gathered and the underlying picture presented. Readers will note how sales found its lowest level in 1932 and gained appreciably in 1933. Also, the breakdown between cost of material, labor and expense and the drop in cost of labor and materials in 1933 over 1930 for somewhat the same volume of business.

The second tabulation covering profit and loss indicates a somewhat confusing picture. Per cent of profit has fallen in the four years; per cent of loss has risen, but is lower than the peak loss of 1932. Volume of business has gained, but is still below the volume of 1930.

The third tabulation showing ways in which reporting firms apply overhead is interesting because it demonstrates that there is no set or universally popular method. Further, we invite readers to study the percentages of overhead shown under the different ways of applying overhead. Note the wide range in percentages and the big increase in percentage on productive labor. Applied on both material and labor the percentage has remained pretty much the same.

Michigan

In Michigan the state association has prepared an elaborate survey sheet and has mailed a copy to every firm known to exist in the state. This questionnaire is very complete and it is hoped will bring in information covering the smallest details of business in the state.

The two inside pages of this questionnaire are reproduced with this article. Readers are invited to study the detail covered, particularly the various items listed under materials, labor and expenses.

Frank Ederle, secretary, states that while the main idea was to make the survey sheet as simple as possible so that every contractor can give himself a fair and comprehensive showing, the sheet is also designed to furnish the kind of cost figures the NRA will require in determining a minimum overhead mark-up.

Five general classifications of contracting are listed and contractors are asked to assign themselves to one or more of the five listings. These five groups aregeneral sheet metal, ventilating, furnace installation, built-up roofing including slate, tile and sheet metal therewith, steel roofing.

INCORPORATED	h:				
(1) Capital Stock	Outstanding Dec.	31, 1933, or at C	lear of Last Fisc	al Year	. 1
(2) Earned Surpl	us and Undivided	Profes			
(3) Other Surplus					. \$
	T	otal Net Worth			
Name of Manager.					
A PARTNERSHIP	OR PROPRIET	ORSHIP:			
(1) Net Worth at	Dec. 31, 1933, or	at Close of Last	Fiscal Year .		. 1
Name of Manager	if a Partnership	Operated Under	Assumed Name		
Name of Proprieto	er (if Operated U	Inder Assumed	Name)		
TE OF ORGANIZ	ATION OR OPE	HING OF BUSE	NESS		
LUES OF PLANT	AND EQUIPM	EN1:	1	Book Value	Annual
			Original Cost	Last Annual Closing Date	Depreciation
(1) Land (Occup	ned by Business)				* * * * * * *
(2) Buildings (F)					
(3) Machinery, E	quipment and To-	ola			
(4) Delivery Auto	os and Trucks				
(5) Automobiles -		inistrative			
(6) Office Furnit	ore and Fixtures				
VENTORIES:					
The Inventories shall the Beginning and give total in last ou	Close of Each Yea	d include Materi or for which figur	uls, Work in Pro res are submitted	on Page Three. If	ls and Supplies as at records do not divide
	[]	Work in	Finished		
Dote	Materials	Process	Gooda	Supplies	
-	1				
	1				
1					
	1				
RCHASES (Inclu					
Give Be	low Total Purcha				
	B				

Note: The figures presented on Page Three should be for the years 1931, 1932 and 1933. If you operate on a fiscal year basis, submit figures for years ending nearest the close of these years.

	Year Ended	Year Ended	Year Ended
	193	193	190
NET SALES			
MATERIALS, LABOR AND EXPENSES			
Materials Consumed (See Rem One (1) of Instructions)	-		
Productive Labor (See Item Two (2) of Instructions) Non-Productive Labor (H Determinable)			
Salarius — Officers, Partners or Proprietor (not charged to either of foregoing classifications — Indicate Per Cent ————————————————————————————————————			
Sales Salaries and Commissions			
Truck Drivers. Clerical (Bookheeping and Other Office).			
Power, Light and Water Fuel for Heat			
Fuel for Heat	1		-
Ront — Shop (if not owned))			
Depreciation:			
Machinery, Equipment and Tools			
Delivery Autos and Trucks			-
Automobiles — Sales and Administrative Office Furniture and Flatures			-
Repairs — Buildings.			
Repairs Machinery and Equipment			-
Supplies and Repairs - Delivery Autos and Trucks			
Supplies and Repairs — Autus — Sales and Administrative			
Real Estate and Personal Property			
State Privilege (if Incorporated). Special Licenses and Other Taxes.	-		
Special Licenses and Other Taxes.	1		-
Employees Compensation and Public Liability			
Employees Compensation and Public Liability Fire and Windstorm and Other			
Life Insurance (Corp. Officers, Partners or Proprietors) Freight and Drayage Out	-		
	-		
Small Tools Expense			
Telephone and Telegraph			
Small Tools Expense Telephone and Telegraph Stationery, Printing and Office Supplies		-	-
Advertising Legal, Audit, Collection Fees.	-	-	
Loss on Bad Accounts — Less Recoveries			
Interest Expense Discounts Allowed			
Discounts Allowed.		-	
Dues and Subscriptions.	1 1	11	-
Traveling Expense			
Miscellaneous Expense (not Classified Above)			
Total European			-
total ampetition		11	
NET PROFIT OR LOSS FROM OPERATIONS			
Add Other Income:			
Discounts Earned Interest Received			-
Sundry Other Income	1 1		
Total Other Income			
NET PROFIT OR LOSS FOR YEAR			
POPAL MOURE PRODUCTIVE STAR		11	
TOTAL HOURS PRODUCTIVE TIME		11	
HASE WAGE PAID PER HOUR			
OVERHEAD ALLOWANCE USED			

Michigan's survey form is elaborate and designed to get every available bit of information from reporting firms. The form was printed and mailed to every known contractor in Readers the state. are invited to study carefully the many items the Michigan Association feels should be reported on by members.



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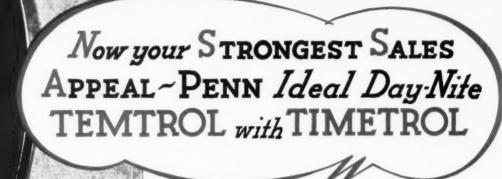
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Air Conditioning Section

Devoted to the technical and merchandising problems of air conditioning in homes and small buildings

> ONE of the purposes of this air conditioning section of American Artisan is to give publicity to new ideas which aid in simplifying, promoting or advancing the general art of air conditioning. - - -We take pride in the fact that numerous developments received first attention in this section. Also in the fact that many worthwhile questions and problems have been discussed at length in these pages. - - - For example, automatic controls. Every contractor uses them, but few do much intelligent experimenting. A series of articles on controls was started in June, 1933, and still continues. - - -We call attention to the control article in this issue. It deals with a new idea—use of a two-speed blower. The idea has found acceptance and championship by several manufacturers and by some contractors, but the industry knows little about it. We invite readers to study the discussion.



At About ONE-THIRD the COST of Complicated CLOCK THERMOSTATS

AT LAST you can offer your customers all the advantages of day-night control, plus many new features . . . NOW AT ABOUT ONE-THIRD THE COST OF CLOCK THERMOSTATS.

Penn Day-Nite Temtrol with Timetrol brings all the comfort, convenience, and economy of plain Temtrol Regulation, but unlike conventional clock thermostats, it prevents costly overheating or adjustments after the morning warm-up period. It saves 5 per cent to 10 per cent on yearly fuel bills.

The inexpensive time switch, Penn Timetrol, may be located anywhere and operated at any time. It never lowers the temperature at a definite, fixed time, but only when desired, and automatically restores normal day temperature any number of hours later selected.

Practically any existing Penn Temtrol installation may enjoy the convenience and economy of Penn Day-Nite Control. The cost is unusually reasonable, the installation easily and quickly done, and your profit exceedingly attractive.

We urge you to write today for complete information and prices.

NEW TEMTROL DEMONSTRATOR

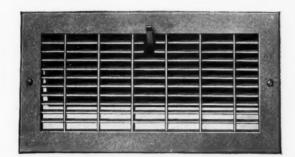
Equipped with Gothic Day-Nite Temtrol, Modern Temtrol, and Timetrol, this attractive Demonstrator can be used as an attention-compelling display in your salesroom, and by your salesmen, or hooked-up for a convincing trial operating period in the prospect's home. Costs less than the price of the controls. Write at once.



This is the simple, inexpensive time nutteb. Frun Timetrol, for use with Day-Nite Temtrols, Modern or Cothic design. Locate it anywhere, is never lowers the temperature at a definite fixed time as clack thermostart do, but only when desired. Penn Modern Day-Nite Temtral, the only temperature regulator especially designed for low mounting to maintain TRUE COMFORT in the FOUR FORT ZONE. PENN ELECTRIC SWITCH CO.

BRANCHES New York Bostom, Detroit, Cheago.
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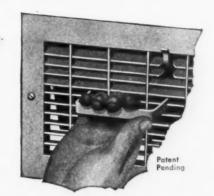
NEW! REVOLUTIONARY!!



Registers and Grilles with grille bars made adjustable so that air flow can be directed upward or downward, or to the right or left, to any angle desired to 45 degrees.

INDEPENDENT "Fabrikated"

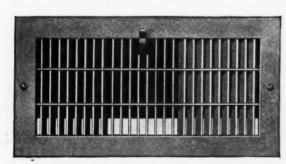
Adjustable DIRECTED AIR FLOW REGISTERS AND GRILLES For Forced Air Installations





No. 311-A HORIZONTAL GRILLE BARS

This shows grille bars adjusted for downward deflection of air. They may be pitched from straight to any angle within 45 degrees, either down or up, wholly or in part, as conditions require.



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No. 321-A VERTICAL GRILLE BARS

Here the grille bars have been turned to direct the air outward at the ends and straight out at the center. This illustrates one of the many combinations of adjustments which can be made to secure any desired direction of air flow. Grille bars are inserted firmly but the tension is such that they can easily be changed from one angle to another with the tool which accompanies each shipment, and any desired directed air flow attained.

HERE are the perfected registers and grilles that heating engineers have needed and have been waiting for. They give complete latitude for controlling direction of air flow, and make it possible to direct air flows with exactness never before attainable.

Any register or grille may be set to deflect air all in one direction, or air may be directed in several directions from the same register or grille.

Grille bars can be set at predetermined angles before installing, and after the system is operating, they may easily be changed at any time to make corrections necessary to meet unforeseen or changed conditions.

These registers and grilles are entirely new, unique. None other can compare with them in construction, efficiency, and range of directed air flow.

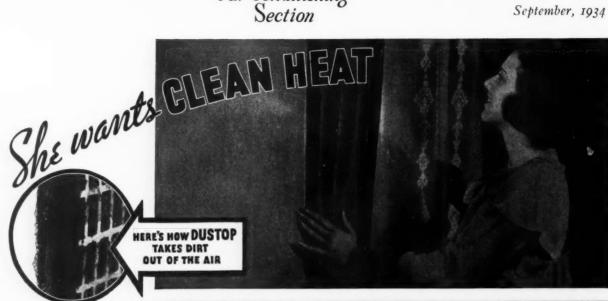
Write for literature giving complete information. Coupon is attached for your convenience.

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Owens-Illinois Glass Company, Industrial Materials Division, Toledo, Ohio. (Dustop is assembled and installed in Canada by General Steel Wares, Ltd., Toronto.)



AIR FILTERS Necessarily, these articles covering a brand new subject can proceed only so fast. We wish to present the subject in a logical manner and discuss fully each point as we reach it. Complete presentation of the material will, therefore, take numerous articles. Contractors confronted with specific problems connected with air conditioning radiator heated houses are therefore invited to submit their problems to us. We won't undertake to design complete systems, but we will answer questions free.

By Platte Overton

Air Conditioning for Radiator Heated Houses

WO articles have been published so far in this series on air conditioning radiator heated houses. The first article (July) explained the points of difference between hot water, vapor and steam apparatus and systems. The second (August) briefly reviewed the formulas and engineering expressions the contractor ought to understand, because he will use them in his calculations and design.

We are now ready to take the floor plans for the house shown in Figs. 5, 6, 7 and analyze the particular problems which must be accounted for in our design. The easiest way to get these important facts down in black and white so we can't lose them or overlook any one is to make out a data sheet for the job.

There are many forms of data sheet. The one shown in these articles has been used by the writer for many years and has always given satisfaction. To fill in any data sheet for a design based on the Btu. method of calculating heat losses we must understand the meaning of such terms as Btu., con-

stant, factor, infiltration, exposure and so forth.

A Btu. is a measure of heat energy and is explained in a former paragraph. In calculating heat losses the Btu. is generally used and is expressed in Btu's per hour, per square foot of exposed surface. Referring to Figure 12 we see a cross section through the construction of the house. These are: wood siding, 1-inch sheathing, 2x4 stud, lath and plaster. The coefficient of transmission called constant is given as 0.262.

A Constant is the amount of heat (Btu.) transmitted from inside to outside in one hour per square foot of wall, floor, ceiling or roof for a difference of one degree Fahrenheit. Note that the constant is for one degree difference. Hence if our outside temperature is zero degrees and our inside temperature is 70 degrees we have 0 to 70 equals 70 degree difference.

Our Btu. loss is then in all cases, the constant times the temperature difference times the square feet of exposed surface.

On our data sheet—Fig. 13, we note in items 4 to 7 inclusive, the expression "constant and fac-

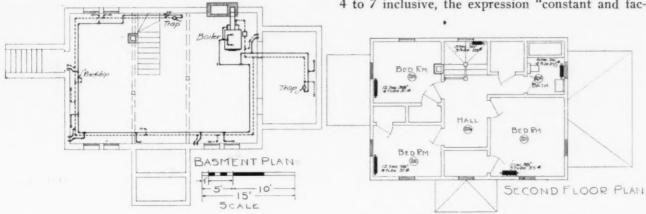


Fig. 5—Above basement plan showing location of boiler and connecting piping.

Fig. 7—Second floor plan showing location of rooms and radiators. Specifications and sizes for radiators are included.

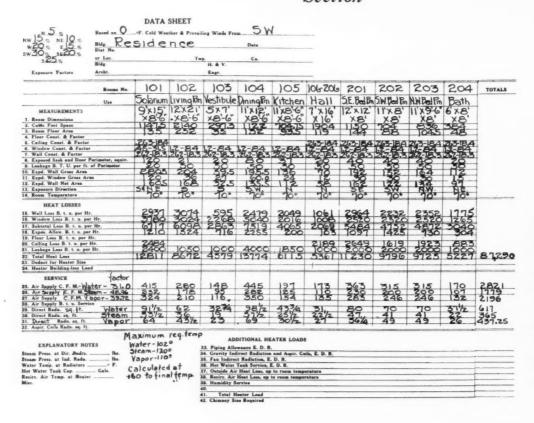


Fig. 13—Our industry is accustomed to data sheets. We find them indispensable in keeping calculations in and in designing any system. Data sheets are just as necessary for the boiler job. This familiar data sheet used again with the necessary changes to necessary applicable make it the problem at hand. Our text this issue discusses filling in the vari-ous items.

tor." We establish a factor by multiplying the constant times the temperature rise, and place it on the data sheet as shown. We will use this factor after we have measured the various exposed surfaces and listed them in items 10 to 12 inclusive.

Referring to our data sheet we find items 1 to 31, and we will review each one of them briefly. Items 1, 2, 3 are room dimensions, area, and cubical capacity. Item 4 is omitted as there are no exposed floors, and item 5 is ceiling constant and factor. The constant for lath and plaster ceilings exposed to unheated attics where the roof is of typical construction is .263. There are exposed ceilings on the second floor and in the solarium. The factor is .263 times 70 equals 18.4. Item 6 is window constant and factor. We have storm sash

for the solarium and the constant is .45, times 70 for the factor equals 31.5 for the factor. On the balance of the rooms it is; the constant equals 1.2 and the factor is 1.2 times 70 equals 84. Item 7 is wall constant and factor and the constant is .262 and the factor is .262 times 70 equals 18.3. Item 8 is linear feet of door and window edge where leakage may occur. Item 9 is the leakage in Btu. loss per linear foot of edge.

The determining, guessing at, calculating or estimating of item 9 is generally accompanied by much head scratching, reference to authorities, and resolutions to use the good old air changes per hour formula or

Cubic ft. of contents imes air changes per hr. imes temp. rise

55

The writer has no formula, rule or chart to even theoretically prove the accuracy of the figures given in this item. They are merely estimates or calculations based on experience. Text books give us figures as high as 143 Btu. for one linear foot of window edge. This is based on a clearance of a certain measured opening all around the sash or a

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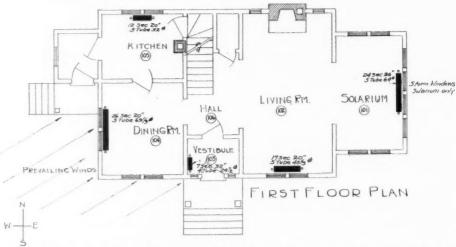


Fig. 6—First floor plan showing rooms and radiators, location and size, prevailing winds and exposures.

Automatic Controls

We begin in this article discussion of a highly interesting control system—wherein the fan runs practically all the time, but at two speeds. The high speed is for heat; the low speed maintains distribution and balance. Register air temperature varies with the fire, but within limits.

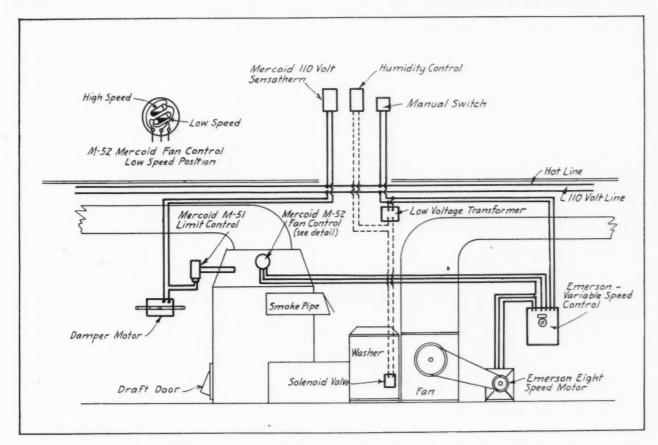
ITHIN the last year the industry has come to recognize and appreciate the limitations of forced air heating systems wherein the fan operates only a portion of the time. Contractors have discovered that whereas their systems work well while the fan is running, a state of unbalance may quickly occur as soon as the fan stops. Contractors have also found (and research and observation such as the American Artisan test houses have verified) that when the fan stops all sorts of strange things appear in the average forced air system.

Some typical troubles of this kind were described in reports of American Artisan test houses numbers two and three described last winter. Usually we find that when the fan stops, stratification of air between floor and ceiling occurs in all rooms excepting those where there is a large gravity flow; some supply pipes may reverse and become returns; areas of rooms adjacent to large windows tend to cool rapidly; some rooms may overheat badly while others cool too fast for comfort; drafts may make themselves felt across floors and through stair wells—to mention a few troubles.

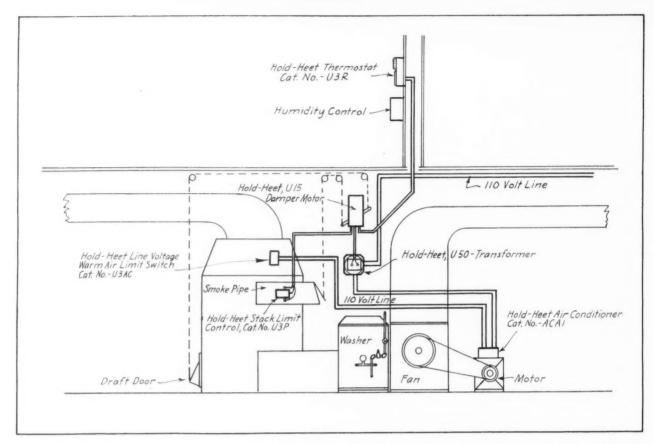
These conditions are not the fault of the forced air system. Neither are they faults in design, because no designer can make a system work equally well on forced air and gravity flow. The real heart of the trouble is that we have designed a system to work while the fan runs and we are compelled to leave to chance what happens when the fan stops.

Variable Speed Fan

So the industry has come to appreciate the desirability of having the fan run as much of the time



The apparatus shown above by the Mercoid Corporation controls the fire through a Sensatherm and damper motor. A limit control prevents excessive and too low bonnet temperatures. The fan runs on low until bonnet temperatures reach a fan "on" and continues until bonnet temperature drops later. The fan motor has eight speed choices, but uses only two for heating.



Russell Electric Company uses a capacitor motor having variable speeds obtained with a series controller. By connecting the bonnet switch in parallel with this series controller two speeds are available. When the bonnet switch closes it shorts out the controller operating the fan on high speed. The reverse cycle throws the fan into low speed. Low speed is manually adjustable to any value.

as possible or all the time if the idea can be sold the home owner.

Recently there has arisen a new school of thought. The platform of this school is—let the fan run all the time, but provide more than one speed of the fan so that most of the time the fan will supply enough air to overcome stratification, reversed air flow, cold areas, drafts, and the other ills mentioned before. The fan runs, say two-thirds of the time on the low speed, and goes into full speed operation only when the thermostat or thermostats call for heat.

There is a great deal of sound thinking in this idea. It has shown some surprisingly good reactions from owners and on test in various parts of the country. We should, therefore, look into this idea from the standpoint of discussing how such a system can be controlled.

Letters sent to contractors and manufacturers asking how such operating systems are controlled and what kind of apparatus is used indicate that at present two general types of control are popular.

The first system is based on the principle of having the room thermostat control the fire through a damper motor. When the thermostat calls for heat the draft opens. When the room thermostat is satisfied the draft closes. The fan, meanwhile,

is controlled by a bonnet instrument giving two speeds and having no electrical connection with the thermostat-damper motor circuit. Two temperatures are selected—say 100 and 160 degrees. As long as temperatures in the bonnet are between 100 and 160 degrees the fan runs on slow speed. Whenever bonnet temperatures exceed 160 degrees the fan runs on high speed. The fan will continue to run on high speed until the bonnet temperature falls to 160 degrees which is, of course, after the room thermostat is satisfied and the closed draft has permitted the fire to die down. Other temperature settings can be used and are advocated by firms answering our questionnaire.

Master Thermostat Control

The second system is based on having both fire and fan controlled by the room thermostat. Instruments and electrical connections are required which either have two settings at the thermostat (two-bladed thermostat) or which can be inter-connected in such a way that the damper motor while under the control of the room thermostat primarily is also under the control of the bonnet fan instrument. In this case the bonnet instrument not only is a fan control but also a limit control. The same arrange-

ment can be used where a stack limit control is used.

A common question under number 1 is—"what happens when bonnet temperatures fall below the low setting for the slow speed of the fan?" (Say 100 degrees as mentioned above.)

On some systems the fan stops whenever temperatures in the bonnet are below the low setting for slow speed. On other systems an auxiliary control is wired into the room thermostat-damper motor circuit to open the draft when this minimum bonnet temperature is reached. This means temperature over-run in mild weather unless the setting is lowered.

How Low Can We Use Air?

This brings up the interesting point—how low can this low temperature setting be established? The reason for the question is that in such a system it is not desirable to accelerate the fire while the room thermostat is satisfied and we want, therefore, to run the fan on as low temperature as possible without accelerating the fire.

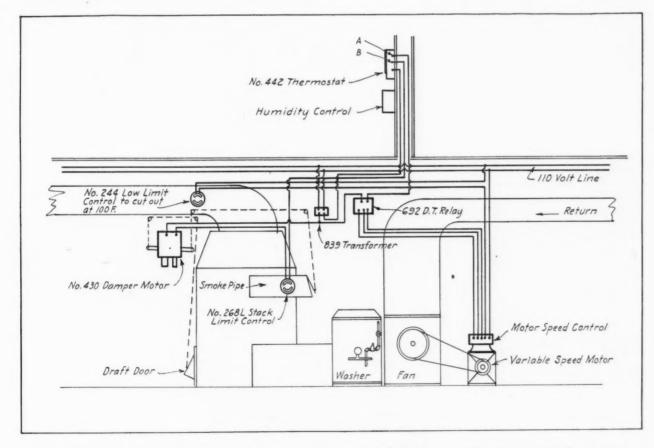
There are a number of related facts connected with the answer to this question. First of all is the question of how low a temperature can we introduce into our house without causing a feeling of chill? This, in turn, relates to the location and kind of registers and register location we are using. If our registers are in the side walls we know we can introduce lower temperature air than we can with the usual type of floor or baseboard registers. And, again, we know with registers having diffusers or deflectors which cause a fan shaped air stream or deflect the air stream down to the floor we can use lower air temperatures. Generally speaking, however, all types of baseboard registers require higher air temperatures than do side wall registers.

In the Research Residence where most of the registers are located in baseboards temperature charts show that the variation in register air temperatures ranged from a minimum average of 90 degrees to a high average of 120 degrees. At 90 degrees tests showed that the borderline between comfort and chill was reached so that any lower temperature would likely be too cold.

Effect of Velocity

Another related fact is register air velocity. We know that the higher the velocity the higher must be the register air temperature for comfort. What is meant by high velocity? There seems to be some tendency in the industry to standardize on

(Continued on page 33)



Detroit Lubricator Co. provides two speed operation with a two-bladed thermostat (set 72 and 70 degrees or on choice). When bonnet temperatures are below the low limit control setting the draft opens, but the fan is idle. When the low limit setting is reached the fan starts on high speed. When room temperature reaches the setting of the upper blade (72 degrees) the fan goes to low speed. The draft closes on 70 degrees. As the room cools the fan goes into high speed at the 72 degrees. If room temperature continues to drop the draft opens at 70 degrees.

Air Conditioning at Chicago's Century of Progress



Above—Forced warm air, gas furnace with cooling coil in return duct and compressor, zone distribution and zone control, and behind a straight gas furnace, Fox Furnace Company—American Radiator Co. building.

A number of air conditioning displays at the Century of Progress were shown in our August issue. Here are additional displays which have been "pulling" visitors all summer.



Above—Visitors to General Cigar Co. exhibit stand in a cooled, airwashed room. A complete recirculating system is employed.

Left—Bryant Heater Co. display in Home Planning Hall shows a conversion burner, gas boiler and radiator.



Above—Armour and Co. cool and air condition this glass enclosed meat packing display.



Above—Willard Storage Battery Co. freezes batteries in solid cakes of ice. While frozen in ice a battery is used to hoist an automobile. Here is where the batteries are frozen in. York equipment.



Above—Holland Furnace Co., furnace and unit air conditioner in House of Tomorrow. Glass doors show all working parts and signs explain all features. The system is operated.



The flower cases in the Horticultural Building are cooled to keep plants and flowers fresh. York equipment,



Special oil burning and coal burning furnaces, with and without fans, in display of Fox Furnace Company, American Radiator Building. Working demonstrations are featured for visitors.

Automatic Controls

(Continued from page 31)

250-300 feet per minute as a good register velocity. This speed should not be thought of as high velocity. Velocities as high as 250 feet per minute can be obtained through high side wall registers on second floors with gravity. Further, we know that in an average room a velocity below 300 feet per minute will not carry the air stream across the room so when we speak of high velocities we should be thinking in terms of 500 feet per minute or thereabouts

We should be able to set the low speed "on" setting of our fan at about 105 degrees (90 degrees at the register plus 15 degree duct drop). And with a 105-degree setting we should get practically constant operation of the fan during the heating season. In the mild weather of spring and fall undoubtedly we will have periods when the bonnet air temperature is not 105 degrees and our fan will not run, but in mild weather the advantages of constant fan operation are not so necessary as in regular heating weather.

High-Low Dividing Point

We now come to the point of choosing the setting at which our fan changes from slow to high speed. We said above, "supposing we use 160 degrees." This is not in any way a customary setting. To select the temperature at which the fan changes from low to high speeds we should consider the following facts.

As long as we have two speeds and practically constant fan operation at one speed or the other, it is to our advantage to keep the fan on low speed as much of the time as possible. We use the high speed in coldest weather and presume that in average winter weather our fan will run on low speed from one-half to three-fourths of the time.

In cold weather when the low speed maintains circulation, but also permits slow drop in room temperature, when we need heat we want it as soon as possible. There is no point, therefore, in attempting to lengthen the operating time on slow speed by raising the temperature setting at which the fan goes into high speed to a point where it requires a considerable length of time for the furnace temperature to pick up. Neither is there any point in setting the high speed temperature so low that we quickly exhaust the hot air from the bonnet and cause the fan to revert to low speed. What we want is long periods of slow speed operation and when heat is needed continuous high speed operation until the thermostat is satisfied.

(Continued on page 57)

THE COOK HEAT CONTROL STORY

THE COOK HEAT CONTROL-WHAT WILL IT DO FOR ME ?

PLENTY, AND MORE FOR YOUR WIFE AND FAMILY, SET THE THER MOSTAT FOR THE TEMPERATURE YOU DESIRE. A DROP OF ONE DEGREE AND THE THERMOSTAT OPERATES TO OPEN THE DRAFT DOOR AND CLOSE THE CHECK DOOP WHEN HE TEMPERATURE RISES TO THE THER MOSTAT SETTING THE THER MOSTAT OPERATES TO CLOSE THE DRAFT DOOR AND OPEN THE CHECK DOOR

THIS GOES ON ALL DAY AND NIGHT-YOU HAVE EXACTLY THE TEMPERATURE YOU DESIRE, LIVING IN SUCH A COMFORTABLE TEMPERATURE WILL KEEP YOUR FAMILY FREE FROM COLDS AND WINTER SICKNESS, ESPECIALLY YOUR AGED MOTHER WHO FEELS TEMPERATURE CHANGES SO READILY. IT COSTS LESS THAN ACENT A DAY TO OPERATE.

> MY WIFE TO FIRE THE FURNACE

IS IT SAFE?

SHE DOESN'T NEED TO FIRE IT AT ALL WHEN YOU HAVE COOK HEAT CONTROL. SHE FORGETS THE FURNACE ENTIRELY. YOUTAKE CARE OF THE FIRE AFTER -BREAKFAST AND IN THE EVENING THE FUEL IS BURNED SCIENTIFICALLY ONLY AS HEAT IS REQUIRED AND NATURALLY YOU DON'T BURN SO MUCH. ITSELF IN FUEL SAVINGS IN A SUPRISINGLY SHORT TIN



IS THE CHECK OF HAFT DOOR OPEN



NO A SPECIAL FEATURE OF COOK CONTROL IS THIS - REF YOU FIRE, YOU PUSH IN THE CLUTCH BUTTON ON THE CONTROL - INSTANTLY BOTH CHECK AND DRAFT DOORS ARE CLOSED, NO DANGER OF GAS OR SMOKE BELCHING OUT IN THE BASEMENT. THREE MINUTES AFTER YOU PUSH IN THE CLUTCH THE UNIT IS AGAIN UNDER THE CONTROL OF THE THERMOSTAT. ITIS FULLY AUTOMATIC.

THE SAFEST CONTROL ON THE MARKET. ANY FAILURE OF THE ELECTRIC CURRENT SUPPLY WILL CLOSE THE DRAFT DOOR AND OPEN THE CHECK DOOR. THERE IS NO DANGER OF OVER HEATING-BURNING UP YOUR FURNACE OR YOUR HOUSE. NO CAUSE FOR WORRY WHILE YOU ARE AWAY - THIS SAFETY FEATURE IS EXCLUSIVE WITH COOK CONTROLS AND A MIGHTY IMPORTANT

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This Cook Control is listed as standard by Underwriters Laboratory. The Anthracite institute, and guaranteed by a reliable organization who has had over 30 years experience in manufacturing quality electrical asparatus. There are more than 65,000 homes enjoying the comfort, convenience, health, and safety of Cook Heat

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Cook Heat Control

Costs you \$15.00

Complete \$15.00
This will be a Cook Heat
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FEDERAL BETTER HOUSING PROGRAM not only
recommends heat centrol devices, but provides the money
for such installations.

Ask your Jobber's Salesman, or write

COOK ELECTRIC COMPANY

Comfort Cooling With Attic Ventilating Fans [Part 4]

By A. P. Kratz and S. Konzo*

FOLLOWING a given method of night operation, the maximum temperature attained the next day after the windows have been closed at 6 a. m., depends upon the indoor temperature attained at 6 a. m. and the subsequent rise in outdoor temperature. As indicated by Fig. 5 this indoor temperature at 6 a. m. was the same as the minimum temperature attained indoors. Hence, it was determined by the night history, or the temperature drop shown in Fig. 6 corresponding to the particular method of night operation under consideration. The difference between the minimum outdoor temperature and the indoor temperature at 6 a. m. may be represented by, C, shown in the

Windows Windows
open. Closed Outdoor Temp

The Minimum

Night 6AM Day
Temperature Cycle

All 6AM is coincident with the minimum indoor air temperature at that the house reaches in the morning. Very few exceptions

Can be noted

Data plotted: May 31 to Aug 31, M33.

Fig. 5-Indoor air temperature at minimum value at 6 a. m.

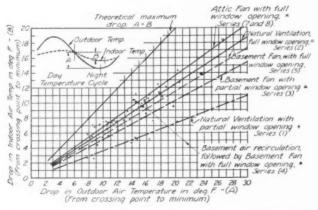


Fig. &—Curves of temperature drops for various methods of night air cooling in Research Residence (summer of 1933).

This article concludes the series on cooling with an attic fan as covered by tests at the Research Residence at Urbana. In this article the authors discuss forecasting next day's results from the previous night's history and the use of an attic fan in conjunction with an ice cooling system. Readers are requested to study the conclusions carefully.

diagram in Fig. 9. The observed data from all of the tests not involving artificial cooling have been classified under four arbitrary values of the temperature difference, C, and the results have been plotted in Fig. 9, giving the relation between the rise in indoor temperature and that in outdoor temperature for the different values of C.

If the temperature corresponding to the crossing point of the indoor and outdoor temperature curves in the early evening hours is known for a given day, and the subsequent minimum outdoor temperature is obtained from the weather reports,

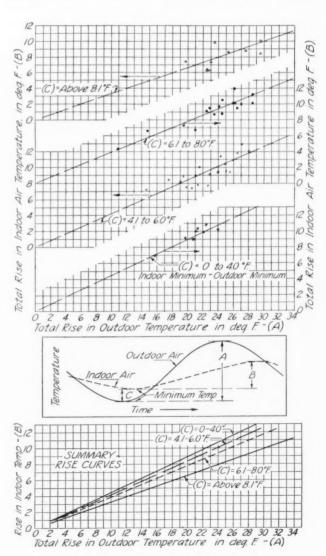


Fig. 9-Temperature rise curves

^{*}Study of Summer Cooling in the Research Residence at the University of Illinois, by A. P. Kratz and S. Konzo. A. S. H. V. E. Journal Section, Heating, Piping and Air Conditioning, December, 1933, p. 613. Paper presented at the 40th Annual Meeting of the American Society of Heating and Ventilating Engineers, New York, N. Y., February, 1934.

both the indoor temperature drop and the difference, C, can be evaluated from the temperature drop curve in Fig. 6 corresponding to the particular method of night operation. The indoor temperature at 6 a. m. can then be found by subtracting the indoor drop from the temperature at the crossing point. By the aid of these data and the rise in outdoor temperature, A in Fig. 9, the rise in indoor temperature and the maximum indoor temperature attained in the house next day can be calculated. If some relation could be shown between the tem-

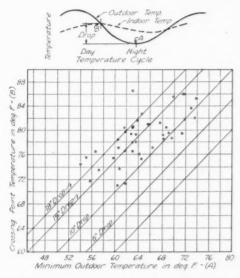


Fig. 10—Normal range of crossing temperature corresponding to minimum outdoor temperature. (Research Residence data, summer of 1933)

perature at the crossing point and the minimum outdoor temperature following it, or the drop from the crossing point to the minimum outdoor temperature, then, for a given method of night operation, the probable maximum temperature attained in the house next day could be predicted for various combinations of outdoor minimums and succeeding outdoor maximums obtained from weather reports.

The relation between the temperature at the crossing point and the minimum outdoor temperature obtained from the observed data is shown in Fig. 10. Lines representing equal temperature drops from the temperature at the crossing point to the minimum outdoor temperature have been added. From the spread of points in Fig. 10, it may be observed that a number of different crossing point temperatures may exist for any given minimum outdoor temperature. Under these circumstances, for a given series of tests, in which the temperature of the crossing point is known from the test data, the solution for the maximum indoor temperature for the next day is obvious and simple. The difficulty in applying the curves to the prediction of the maximum house temperature in general, when no test is available but when the method of operation is given and the minimum and maximum outdoor temperatures are known from the weather reports, lies in the fact that, while all of the other factors are known or determinable from the curves, the temperature at the crossing point is a casual factor depending on the previous history of the house and the weather. It may be noted from Fig. 10, however, that over the whole range of observed weather conditions, the temperature

Two profitable fans for YOU



Sheet metal men are beginning to realize that there are a number of profitable items that home owners will BUY — if you show them how they'll benefit. Hundreds of contractors have found it profitable to sell the two fans shown here to home owners.

Do YOU want some of this business?

Type "HVA" Fans—Designed to provide forced circulation in warm air heating systems, or on other heating, cooling or drying systems. HVA fans are silent, efficient, sturdy and inexpensive. You can sell them in many homes where a new furnace job is out of the question. Single, double and triple units—for stock shipment.

"ACE" Coal Burner—A sure-fire sales item. You can show your prospects how this fan will enable them to reduce coal bills from twenty to sixty dollars per season—with improved heating, automatic temperature control and less



THE HEAT REGULATOR

THAT HELPS YOU SELL

No man wants to buy a heating plant. What he wants is winter comfort at the lowest possible cost. He will deal with you if he finds that you can provide this. You can. You can equip his plant with the heat regulator that will put back into his pocket a considerable sum of money he would otherwise have to pay for his winter comfort—the MASTER Heat Regulator.

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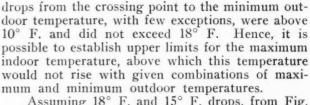
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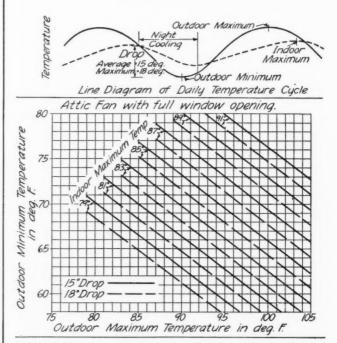
MASTER HEAT REGULATOR



Assuming 18° F. and 15° F. drops, from Fig. 10, as characteristic of the most severe and of average weather respectively, the curves in Fig. 11 have been drawn representing maximum probable indoor temperatures resulting from various combinations of minimum and maximum outdoor temperatures occurring in connection with the most and least favorable methods of night operation. These may be used to predict the probable maximum indoor temperature from the weather reports of a given summer season.

Experience at the Research Residence seemed to indicate that approximately 82° F. dry-bulb was a critical temperature from the standpoint of comfort. Without artificial cooling, and with the usual indoor relative humidity of from 50 to 60 per cent, conditions were reasonably comfortable if the indoor temperature did not exceed 81° F. This was

equivalent to an effective temperature of between



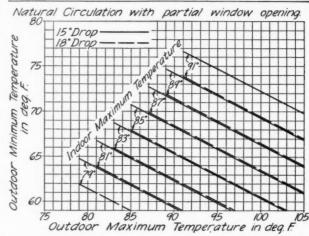


Fig. 11—Calculated maximum indoor air temperatures (Research Residence data, summer of 1933)

Weather Bureau readings of Urbana, Illinois plotted for months of June, July, Aug. & Sept. for 7-yr. period from 1927 to 1933 inclusive.

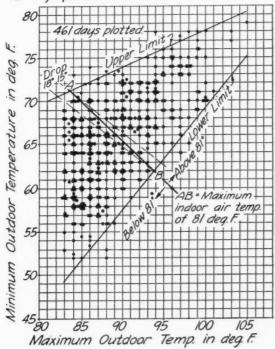


Fig. 12—Combinations of outdoor maximum and minimum temperatures in Urbana, Illinois.

74 and 75.5° F. Hence 81° F. dry-bulb was accepted as the upper limit for comfort without cool-

ing, and, for the cooling tests, the cooling plant was started when the indoor temperature reached 81° F. Under these conditions, owing to the reduction in indoor relative humidity when the cooling plant was in operation, the effective temperature remained somewhat below the 75° F. indicated as the upper limit on the comfort chart.

Fig. 12 shows the various combinations of maximum and minimum outdoor temperature occurring at Urbana, Illinois, during the past seven summers. Practically all of the plotted data could be included between two lines representing upper and lower limits. From these curves it may be observed that with a maximum outdoor temperature of 100° F. the preceding minimum would not have exceeded 78° F. Judging from the points shown in Fig. 10, with this minimum outdoor temperature, the greatest drop from the crossing point to the minimum would be of the order of 12° F. and certainly would not exceed 15° F. Hence for a day on which the maximum outdoor temperature was 100° F. with 78° F. minimum outdoor temperature the night preceding and a 15° F. drop in temperature from the crossing point to the minimum outdoor, a maximum indoor temperature not to exceed 92° F. would be expected if the attic fan

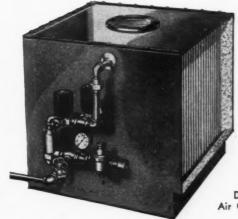
had been operated during the night.

On the other hand, if the house was operated on natural ventilation with partly open windows as in *Series I*, an indoor temperature of 94.5° F. might be obtained. During one season comparatively few 100° F. days would occur. There might be a considerable number of 95° F. days, however. In this case, Fig. 12 indicates a possibility of a

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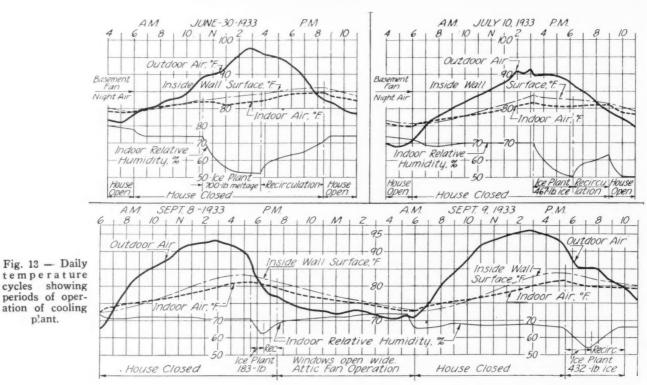
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plant.



minimum outdoor temperature of 76° F. and Fig. 10 of a 15° F. temperature drop. These conditions would result in a maximum indoor temperature of 88.5° F. succeeding a night of operation with the attic fan, and of 92° F. for natural ventilation with partly open windows. Both of these indoor maximum temperatures are considerably above the 81° F. representing the limit for comfort.

It is of some interest to consider the number of days that the maximum indoor temperature might have exceeded 81° F. if the attic fan had been operated at night over the whole period of a season. Assuming from the evidence of Fig. 10 that 15° F. and 18° F. temperature drops represented limiting conditions for outdoor minimum temperatures above and below 68° F. respectively, and obtaining from Fig. 11 the maximum indoor temperature for the actual maximum and minimum outdoor temperatures shown by the weather reports for each day in the summers of 1932 and 1933, it was found that there would have been 37 days in 1932 and 47 days in 1933 on which the maximum indoor temperature might have exceeded 81° F. This, of course, represents the upper limit and it is possible, since Fig. 10 shows about 1/3 of the total number of observed points were below the 15-deg. drop line, that actual operation might have resulted in approximately 25 and 32 days.

The 15° F. and 18° F. temperature drop lines representing indoor maximum temperature of 81° F. have been transferred from Fig 11 and shown in Fig. 12. Since the 15° F. drop line is the most probable upper limit for outdoor minimum temperatures above 68° F. and the 18° F. for outdoor mini-

mum temperatures below 68° F. the line AB represents a limit line above and to the right of which any combinations of outdoor maximum and minimum temperatures may certainly be expected to result in indoor maximum temperatures exceeding 81° F. and below and to the left of which represents such combinations resulting in maximum indoor temperatures not exceeding 81° F. From the points of intersection, A and B, it is evident that the maximum indoor temperature will always exceed 81° F. if the outdoor maximum reaches 94° F., and may do so if the outdoor maximum rises above 84° F.

Hence it is probable that night operation with a fan, even under the most favorable conditions, can not be depended upon to result in comfort over the whole of a summer season in a climate similar to that of Urbana, Illinois, unless supplemented part of the time by some form of artificial cooling. It can be used, however, to alleviate conditions even in the most severe weather, and in this respect may prove satisfactory to a considerable number of householders to whom the cost of a cooling plant might be prohibitive.

Circulation as a Supplement to Ice Cooling

Only the three most favorable methods of night operation involving the use of the basement and attic fans, and full natural ventilation, were used to supplement ice cooling during the day. Fig. 13 shows temperature and indoor relative humidity curves for somewhat similar days and for two characteristic conditions in the operation of the cooling

Table 3-Ice Requirements for Summers of 1932 and 1933

Series No. Method of Operation at Night I Natural ventilation. 8 windows partly open at 9 p. m. Basement fan. 8 windows partly open at 9 p. m. June July Aug. Sept. Total Tonsa July Aug. Sep			Estima	nmer o ted No niring (of Da	ays	Ice Require ment		Estimat	mer of edNo. o ring Co	of Days		Ice equire- ment
3 Basement fan. 8 windows partly open at 9 p. m. 11 18 11 0 40 14 21 18 6 8 53 19	Series No. Method of Operation at Night	June	July	Aug.	Sept.	Total	Tonsa	June	July	Aug.	Sept.	Total	Tons
3 Basement fan. 8 windows partly open at 9 p. m. 11 18 11 0 40 14 21 18 6 8 53 19	Natural ventilation, 8 windows partly open at 9 p. m.	21	24	18	2	65	23	25	24	12	12	73	26
		11	18	11	0	40	14	21	18	6	8	53	19
2 Natural ventilation. All windows open at 6 p. m. 9 17 8 0 34 12 20 15 3 0 44 15	Natural ventilation. All windows open at 6 p. m.	9	17	8	0	34	12	20	15	3	6	44	15
7 and 8 Attic fan, All windows open at 6 p. m. 7 15 7 0 29 10 19 14 3 6 42 15		7	15	7	0	29	10	19	14	3	6	42	15

plant. The test of June 30 illustrates a case in which it was necessary to increase the rate of ice meltage and for which the 700 pound allotment was all melted before the outdoor temperature dropped 3° F. below the indoor temperature, thus permitting the windows to be opened. In the case of all of the cooling tests the windows were not opened at any stated time, but the time was determined by the rate of decrease in the outdoor temperature.

The four tests shown in Fig. 13 prove that the amount of ice used was dependent both on the maximum temperature attained during the day and on the history of the preceding night. The tests of September 8 and 9 indicate that as a hot wave progressed and the maximum and minimum outdoor temperatures increased from day to day, the ice required increased because the cooling plant either had to be started earlier, or had to be operated longer before the outdoor temperature dropped 3° F. below the indoor. The latter case is illustrated by the test of September 9 for which the outdoor temperature did not decrease as rapidly as it did on September 8. No cooling was required on September 7, although the maximum outdoor temperature was 91° F., which was comparable with July 10, and very little cooling was required on September 8 when the maximum outdoor temperature rose to 93° F. July 10 was preceded by a hot day during the night of which the minimum outdoor temperature was 69° F. as compared with 67.5° F. attained in the early morning hours of September 8. Hence the minimum indoor temperature was reduced to only 75° F. to start the day of July 10 as compared with 72.5° F. to start the day of September 8. Again on September 9, the minimum indoor temperature was reduced to 72.5° F. in the early morning hours, and September 9, for which the maximum outdoor temperature reached 96° F., required about the same amount of ice as July 10, for which the maximum was 90° F.

A few tests, Series 9, with a room cooling unit in the living room proved that, with outdoor temperatures as high as 93° F. the temperature in the living room, lower hall, and dining room could be maintained at from 77 to 80° F. The temperature in the kitchen rose to 82° F. but conditions were not particularly uncomfortable because the relative humidity maintained in the kitchen was the same as that in the other first story rooms. The relative humidity was reduced from a value of about 70 per cent to one of about 55 per cent. The unit produced no noticeable effect on the conditions on the second story.

On the assumption that the attic fan is used at night and the crossing point temperature is limited to 80° F., if an outdoor minimum temperature of 68° F. is observed the indoor temperature drop of 8.1° F. may be obtained from Fig. 6. This represents an indoor minimum, or temperature at 6 a. m. of 71.9° F. The temperature difference, C, shown in Fig. 9, would then be 3.9° F. If the outdoor temperature attained a maximum of 95° F. the next day, the outdoor rise would be 27.0° F., and the indoor rise corresponding to a value of 3.9° F. for C would be 12.0° F. Hence, the indoor temperature would rise to 83.9° F. if no cooling were employed, indicating that the cooling plant would have to be started. By following this procedure for all of the recorded outdoor maximum and minimum temperatures for the summer the number of days requiring

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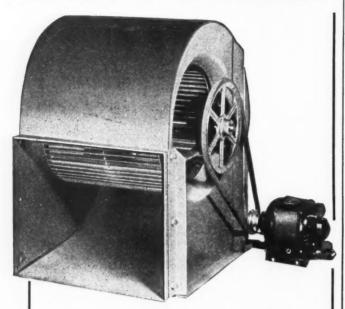
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cooling and the maximum amount of ice required for the season may be obtained. This procedure has been followed for four different methods of night operation for the seasons of 1932 and 1933, and the summary is given in Table 3. Neither season would have required any cooling in the month of May.

During the summer of 1932, which included 1,538 degree-hours above 85° F., 43 tons of ice were required under the system of operation followed for that summer. It is of considerable interest to note that if advantage had been taken of the possibility of circulating night air and an attic fan had been used under conditions corresponding to those for Series 7 and 8, the probable ice requirement would have been only 10 tons. With natural ventilation with all windows open the requirement would have been 12 tons, and with the basement fan with 8 windows partly open it would have been 14 tons. Even with the least favorable method of night operation the requirement would have been only 23 tons.

The summer of 1933 included 2,310 degree-hours above 85° F., and, as indicated in Table 3, the ice requirements would have been somewhat greater than those for the summer of 1932. However the table presents concrete evidence that even the least favorable method of circulating the cool air from outdoors at night, when used to supplement some form of artificial cooling during the day, has merit as a means of reducing the cost of summer cooling to an amount that may not be prohibitive for the average householder.

Conclusions

The following conclusions may be drawn as applying to the Research Residence and the conditions under which the tests were conducted:

- The circulation of air from the outdoors at night, when used as a supplement to artificial cooling during the day, has considerable merit in reducing the seasonal cooling load that would otherwise be required.
- 2. The circulation of air from the outdoors at night may make the use of artificial cooling unnecessary for a considerable portion of the summer season
- siderable portion of the summer season.

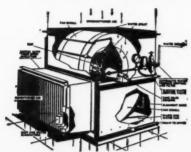
 3. If the best means of circulating air from the outdoors at night had been used at the Research Residence during the summer of 1932 the ice meltage could probably have been reduced from the 43 tons actually used to an amount of the order of 10 tons.
- The practice of partly opening a few windows at night is not very effective as a means of circulating air from the outdoors.
- 5. The use of a fan in a forced air heating system to circulate from 6 to 9 air changes per hour from the outdoors at night is much more effective than opening a few windows even when the same amount of window opening is retained for the two cases.
- 6. The use of a fan in a forced air heating system to circulate 9 air changes per hour is more effective if all of the windows and the attic door or hatchway is opened that if only a few windows are opened.
- than if only a few windows are opened.

 7. The most effective method of circulating air from the outdoors at night is to open all of the windows and to use an attic fan drawing the equivalent of approximately 17 air changes per hour into the windows of the first and second stories and discharging it into the attic to escape from the attic windows.
- 8. In the case of a two story house similar to the Research Residence having an ample attic with dormer windows and large attic door, opening all of the windows and the attic door is nearly as effective for circulating air from the outdoors at night as the use of an attic fan producing approximately 17 air changes per hour.
- 9. There is some advantage in opening the windows at 6 p. m. rather than at 9 p. m. even if the outdoor temperature is slightly higher than the indoor temperature at 6 p. m.

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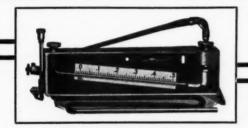
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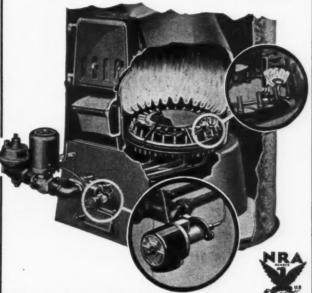
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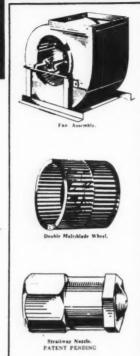
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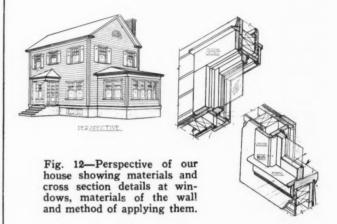
OHIO

Radiator Air Conditioning

(Continued from page 28)

window miraculously suspended in the air. We find in actual practice that all windows have at least one or two edges out of the four that are tight. We also note that with two double hung windows side by side, one may be loose and easy to raise or lower while the other will require the combined efforts of two house wreckers to open.

The foregoing is plainly dodging the question or "passing the buck." The reader who has not by experience developed his own pet theory or formula should follow the air change rule and this rule



should be used with judgment. Let us take the problem of room 101 in Fig. 6. Here we have a room with four exposures (three walls and roof).

The glass area is high in ratio to wall surface. Against this problem of extreme exposure we have: the room is on the windward side of the house; the windows have storm sash, and a wide, high arched way makes this solarium almost a part of a room that has little heat loss in ratio to its floor area. Being on the windward side of the house these rooms will be more or less heated by the balance of the house.

Storm Sash

Again storm sash do not guarantee against all leakage loss. Another point is observed in the fact that all the windows will not carry a leakage loss even with the wind from the northeast. One side of this room is bound to have an exfiltration or "out" leakage in place of "in." To the reader these items may only make the problem more involved, but here we find the use of good judgment imperative.

Item 10 is total exposed wall. Item 11 is glass or door area, and item 12 is item 10 minus item 11.

Item 13 is taken from compass points on the plans. Item 14 is room temperature to be maintained. Item 15 is square feet of wall (item 12) times the factor in item 7. Item 16 is window area

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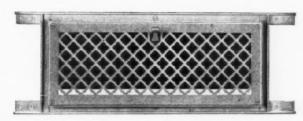
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No. 3231 Sidewall Register

Many Advantages Provided by This New 3-Piece Construction

This register consists of three main parts: A frame, a positioning flange, and the Grille face. From the installation diagram below, note:

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- (C) Frame-supporting extension arms are of sufficient length on all sizes to fasten to studs without any blocking in thus providing solid base for stackhead.
- (D) New narrow margin of grille face presents very neat finished appearance.



(E) Each register is furnished with waterproof cardboard shield which, installed instead of grille during plastering, prevents plaster from getting inside frame or stackhead.

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The above register as well as all others in the extensive H & C Forced-Air line, is available with any of four attractive grille designs. The complete line includes both one and three-piece Sidewall and Baseboard Registers with Return Air Intakes to match. Ideal registers for every requirement.

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in item 11 times the factor in item 6. Item 17 is item 15 plus item 16. Item 18 is item 17 times the exposure factor in the corner of data sheet.

Item 19 is omitted as there are no exposed floors and item 20 is square feet of exposed ceilings times the factor in item 5. Item 21 is item 8 times item 9. Item 22 is the total of items 17, 18, 19. 20, 21,

Determining Air Supply

Item 25 is air supply in c.f.m. if hot water is the heating medium. For this item it is assumed that we will install a mechanical warm air system, and use a boiler and coil in place of a furnace. The c.f,m. is derived by dividing the Btu. loss by the factor 31. This factor is taken from the Table A below:

TABLE A

Room

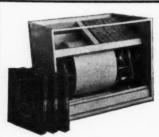
Inlet temperature

temp. 135 125 145 140 130 120 110 115 80 64.92 60.09 56.4 52.32 48 43.56 39.06 30.84 29.82 20.22 70.2 66 70 73.8 61.8 57.6 53.22 48.96 44.28 39.72 30.8 74.88 70.8 66.6 62.4 49.86 44.7 35.88 65 78.6 58.1 53.7 60 83.4 79.2 75.48 71.4 67.2 62.4 58.62 54 49.68 40.44

To determine the c.f.m. in any room where the inlet temperature and the room temperature is known, divide the Btu. loss by the factor selected from the above table.

Example: Room has Btu. loss of 48,960 and room temperature of 70 degrees. Inlet temperature to be 120 degrees. Locate 70 at left hand side of Table A and move to the right until below 120 The factor is 48.96. degrees inlet temperature. 48,960 divided by 48.96 equals 1.000 c.f.m.

Item 26 is air supply in c.f.m. with steam as the heating medium. With a final temperature of 120 degrees for air heated by steam coils, we divide the Btu. loss by the factor 48.96 from the Table A above. Item 27 is air supply in c.f.m. with vapor as the heating medium. Our final temperature is approximately 110 degrees. We refer to Table A and find our factor is 39.72. We divide the Btu. loss by this factor for the necessary square feet of radiation for vapor heating.



Blower Type

AIR CONTROLS, Inc. 1935 W. 114th St. Cleveland, Ohio

WINTER COMFORT

for your customers. Every room uniformly heated, and decreased fuel consumption with the AIR PACKAGE forced circulation unit. Complete with Miles Automatic By-Pass Louvres and Dustop Filters. Have you our data and prices?



"Never before lived through a winter in anything like the comfort we have just experienced."

"The first year in 21 that I have not had bad attacks of asthma."

"During a severe snow storm, the electric power failed, and my burner was the only one in the neighborhood to continue to function."

(From the book of FACTS—case histories and photographs of many Superfex installations—yours FREE.)

AUTOMATIC AIR-CONDITIONING HEAT

WITHOUT COMPLICATED MACHINERY...FOR LARGE AND SMALL HOMES!

Users say "It's Great"

HERE is an inexpensive, efficient, complete oilburning air-conditioning Heating Plant that makes friends wherever it is installed—in small and large homes, and stores.

Superfex automatically cleans, humidifies and circulates heated air. It is a complete trouble-free airconditioning plant which has already been proved by three years of excellent service. Uses inexpensive No. 1 Fuel Oil. Made in several sizes, moderately priced, handsome in appearance.

A real money-making opportunity for good dealers. The records show that service expense is practically eliminated with Superfex. We supply all the data and information needed to establish a profitable business in this much desired type of heating ... complete sales and advertising plan based on years of successful selling.

You may be in an open territory... a Superfex franchise is valuable. Send for the free book of Facts. It contains the case histories (written by users) including operating costs and service records, of many installations in the most severe winter in years. Dealer's say they have never seen anything like it before. Send coupon today.

PERFECTION STOVE COMPANY • Cleveland, Ohio

Makers of Oil-Burning Equipment
For More Than 40 Years

PERFECTION STOVE COMPANY
7982 Platt Ave. • Cleveland, Ohio
Send book of FACTS and complete information about the SUPERFEX heating plant.

Name

Street

City and State



● Model 140E. Heating capacity, 115,000 B. T. U.; dimensions: height 62"; width 66"; depth 40"; maroon baked enamel finish; stainless steel and black japan trim.

COMPLETE AUTOMATIC OIL BURNING

AIR-CONDITIONING HEATING PLANT

For dependable Air Conditioning

USE GENUINE DETROIT CONTROLS

FOR every requirement in air conditioning there are accurate, dependable "Genuine Detroit" Controls. So, no matter what special conditions you may have to meet, let "Genuine Detroit" Engineers help you solve the problem of controls. Only a few of the many units adaptable to air conditioning are shown here. For complete information on any controls illustrated, or for special information about any unusual problem, write to

DETROIT LUBRICATOR COMPANY

DETROIT, MICH., U. S. A.

Canadian Representative: Railway & Engineering Specialties, Ltd., Montreal, Toronto and Winnipeg

• NO. 458 COMBINATION FAN & LIMIT SWITCH—For use on air conditioning unit to start and stop the fan, and also operate as a limit switch for heating. Two instruments in one.



• (Above) NO. 261 CABINET CONTROL— High voltage. A new thermostat for concealment on a room cooler or space heater. Thermal bulb is placed in the incoming air and the knob and dial of the thermostat are on the outside of the cabinet.



NO. 697 HUMIDISTAT—Is a rugged, accurate instrument to control humidifying devices in accordance with the moisture con-



● NO. 691 DIFFERENTIAL THERMOSTAT— Automatically provides inside temperature control for cooling in accordance with the outside temperature. Controls in accordance with the A. S. H. & V. E. "Comfort Curve."





 (Above) NO. 431 MOTOR UNIT—Quiet, twowire, easily attached to duct to operate damper, controlling zone heat.

 (Left) NO. 640 ELECTRIC WATER VALVE— Operates on the thermal motor principle. Closes slowly, preventing water hammering. No AC "hum," Powerful spring insures tight closing.

Springfield, Ohio

Code organization work is coming along in Springfield, with the initial work well under way. We have selected Clark county as our trade area and have elected a code authority committee for that area.

In getting our work under way, we made up a list of 42 firms in this area and on July 14 the following notice was sent under first class mail:

NOTICE

This association is sponsoring the call of a meeting of all contractors operating under Chapter No. 7 of the Construction Code of Fair Competition. Namely Roofing and Sheet Metal Contractors of the Construction Industry.

Object
Election of a Local Code Administrative Committee for Trade Area of Clark County, Ohio.

Place Springfield Chamber of Com-merce, corner of High and Spring

Friday night, July 20th, at 7:30 o'clock.

Messrs. Armstrong and Mirick will be with us and will assist in answering all questions. Mr. Armstrong has given the Code subject much study and comes highly recommended.

This notice has gone to every contractor coming under above section of Code in above trade area to the knowledge of the under-signed. A display newspaper ad-vertisement will be run to comply

with all requirements of the Code. Yours truly, Master Sheet Metal Workers' Ass'n, Chas. F. Hauck, Sec'y

A four inch display advertisement was run in our local evening paper July 13th and morning paper of July 14th.

The meeting was recessed for ten minutes and the various groups got together to select two names to go on the ballot for the various divisions. They reported in ten names and bal-

These were passed around and election held. The following committee was declared elected: E. G. Keller, O. B. Deaton, Chas. F. Hauck, F. O. Jones, C. H. Lawrence.

Proper papers notarized were sent in to W. C. Markle, Secretary of Roofing and Sheet Metal Industries Con-

ing and Sheet Metal Industries Conference and we now await their approval of the committee.

Chas. F. Hauck, Secretary.

Milwaukee

The Sheet Metal Contractors Association of Milwaukee held their annual picnic on August 30. In accordance with Milwaukee and Wisconsin practice, a cold lunch of meats, sausages, cheese and typical German dishes were served. In addition to the luncheon, a mid-day dinner of roast pork and veal with all the trimmings, was provided

for the guests.

President Schmieder acted as toastmaster for the get-together meeting
after the dinner. Otto A. Wendt, National Code Authority Committeeman for Zone 8, was present and addressed the picnic on matters pertaining to the Code. Past President Otto Geussenhainer of the Wisconsin Association, long known for his oratorical ability, also kept the picnic crowd in good humor.

The picnic committee, consisting of Walter March, F. Kremer and Ray Eschenburg, provided entertainment in the form of a baseball game in the morning—salesmen versus sheet metal contractors. The contractors finally won by a score of 28 to 24.

Paul L. Biersach, Secretary.

Chicago

The annual picnic of the Master Furnace & Sheet Metal Association, Inc., was held August 26. A feature of the picnic, in the estimation of the picnic committee, was the absence of all speeches. The entire picnic day was given over to races, games, baseball and the enjoyment of free beer, pop, cracker jack and ice cream.

The supply houses in the Chicago area co-operated with the picnic committee and in place of supplying the usual prize materials many gave the association cash prizes for distribution.

A five-piece orchestra provided en-tertainment and music for dancing in the afternoon and evening.

Paul Barth, President.

Ogden, Utah

There is little to report from our We had an organization following the initial code plans and the association lasted about six months. We were unable to force action against price cutters, who were taking most of the work and our organization blew up. W. O. Jackson, Secretary.

Fulton-Montgomery County

Fulton-Montgomery The Fulton-Montgomery County Sheet Metal, Warm Air Heating and Roofing Contractors Association is operating 100 per cent successfully under the code and has recently elected a Code Authority Committee under the guidance of the State Code Authority, David V. Quackenbush. The following men were elected members of the local code authority committee: Harry Taube, chairman, South Perry Street, Johnstown, New York; Fred Chatterton. secretary-treasurer. 85 Third The Johnstown, New York; Fred Chatter-ton, secretary-treasurer, 85 Third Street, Gloversville; H. S. Lanphere, North Main Street, Gloversville; A. C. Frydenborg, Wall Street, Amsterdam; Duane Evans, Florida Avenue, Am-sterdam and C. W. Pickering, BroadalAt this same meeting we introduced the theory of depository for all bids, whether new work, reroofing, or repair work, over \$150.00, and this depository is working from the fact that all contractors bidding on the job will file a copy with a local bank, which will be opened when the job is let, to define if the low bidder has complied with the code or has chiseled. It seems to the code or has chiseled. It seems to the authority it would be the only way in which to eliminate the chiseler.
Fred Chatterton

Secretary.

Indiana

The Indiana plan of organization is to have each county organized under a lieutenant-governor each district comprising several counties to be organ-ized under the District Governor; the District Code Committee made up of the Lieutenant-Governors; and the state organized under the State Code Authority made up of the District Governors.

Plans of organization and uniform by-laws have been sent out to all of the District Governors and most of the counties have perfected their organizations. Any contractor can write either to the Lieutenant-Governor of his County, the District Governor of his his District, or to the Central Office at Indianapolis for information regarding registration, or regarding the obtaining of the new Code Eagle and of the necessary posters regarding labor.

Wisconsin

The monthly meeting of the Mil-aukee Chapter of the Wisconsin waukee Chapter of the Wisconsin Sheet Metal Contractors Association, held August 13, was devoted entirely to business matters. The Warm Air Furnace Committee, under Chairman Marth, reported that considerable progress had been made during the preceding thirty days and that conferences had been held with all par-ties concerned in the various problems confronting this committee.

The Survey Committee on Cost Accounting and Overhead submitted a summarized report (published on another page of this issue) and reported that any member can obtain a copy for study by addressing the secretary. Paul L. Biersach,

Secretary.

Indianapolis

The Sheet Metal, Warm Air Heating and Roofing Contractors Associa-tion of Indianapolis has received word that district and county chairmen for the Indianapolis district of the Indiana Code Authority organization were approved by the National Code Author-

ity. August 29.

The Local Code Committee is now undertaking to set up the various com-mittees required and to organize the district for compliance.

Elmer R. Mullin, Secretary.

...the problem

Cost Accounting

American Artisan:

Can you give us information on where to find information on the average percentage of overhead for sheet metal and furnace shops? We would like to know what is considered the proper percentage to add for various volumes of business and the usual amounts apportioned to the different items that make up overhead.

We would like to know where we can get information on a simple set of books that would be complete but not too hard to keep.

C. J. A., Minnesota.

Reply by The Editors

We call your attention to the editorial in our February issue covering the subject of cost records and overhead. We honestly believe that this subject has been overlooked in the general discussion of code work and we are sure that if codes are enforced this problem will be of paramount importance.

Our understanding is that the Code Authority for the National Sheet Metal Contractors Association will recommend one or two types of book-keeping systems and that considerable favorable comment has been made on the system advocated by the Philadelphia Association. The general idea of the Philadelphia Association is to apply overhead on productive labor at approximately 100 per cent. We feel sure that you can get full information by writing Secretary Fred U. Ritter, 1003 Race Street, Philadelphia.

Elbow Patterns

American Artisan:

Will you please advise if you can furnish patterns for adjustable elbows?

We understand there is some type of chart on the market showing the layout for all sizes. If so, please advise where we can get this chart and what is its price.

R. S. B., Pennsylvania.

Reply by The Editors

We regret to advise that we do not have any patterns for adjustable el-

bows, nor have we ever seen the chart you mention. There are some firms making such elbows, but they will not give out patterns and so far as we know machine cut the elbows to templates.

Have any readers such patterns or have readers seen the chart this subscriber mentions?

Window Sweating

American Artisan:

Can you tell me if there is any way that store show windows can be kept from steaming up and freezing?

The show windows have ventilated copper sash all around and are enclosed with glass sliding doors. The building is one-story frame and has living quarters in the rear and a full basement and is heated with a warm air furnace. The store faces northeast and the windows do not get any afternoon sun.

I placed a 4 by 8-inch ventilator in the ceiling and have run a 6-inch pipe to within 10 inches of the ventilator to the roof, but this doesn't help. Sometimes the window with the ventilator will steam up or freeze while the other one will be clear. Today with the temperature 20 below the windows are frozen tight and cannot be seen through.

F. K., Michigan.

Reply by The Editors

Moisture and ice on windows indicates moisture in the air. It also indicates that the air of the store coming into contact with this cold surface is reduced in temperature below the dew-point of the air, meaning that the air can no longer hold the amount of moisture suspended and the moisture is deposited on the cold surface. There are a number of ways of overcoming this difficulty. The first is to apply storm sash, which obviously is out of the question in your store.

The second method would be to introduce a stream of warm air over the base of the windows. This warm air rising over the cold glass increases the air temperature next to the glass and by increasing the air temperature increases the ability of the air to re-

tain the moisture in suspension.

You probably have noticed that many stores place an oscillating fan in front of their windows. The fan blowing the air from the room across the glass accomplishes practically the same result as the stream of warm air.

Ventilators ordinarily would have little or no effect because they do not keep warm air in contact with the glass nor do they pull the air by the window fast enough to noticeably increase the circulation next to the window.

We know of cases where contractors have introduced cold outside air to the window on the principle that the outside air is very dry and upon entering the room increases its moisture or acts as a sponge to absorb the moisture in the room. This is sometimes accomplished by ventilators from the outside under the window providing a ventilating fan can pull a curtain of cold air up the front of the window.

Have readers other suggestions?

Drying Potato Chips

American Artisan:

I would like to have information concerning the methods of drying potato chips before frying, and also if there is any machinery adapted to the removal of the water.

C. D., Wisconsin.

Reply By The Editors

If we read your letter correctly, we take it that you wish to dry the potatoes before frying. We understand from manufacturers of machinery to fry and also from potato chip manufacturers that drying before frying is contrary to general practice.

These firms tell us that potatoes are not dried, but are dumped into the hot fat containing their full amount of water.

We enclose name and address of a manufacturer who makes all the machinery used in potato chip frying and you can get full information on the process by writing them.

Have any readers encountered this problem or can anyone contribute information?



WHEN WINTER COMES

Will You Be Far Behind?

It Behooves You Not To Let Old Man Winter Beat You To It. The Forehanded Heat Merchant Is Already Actively Working On His Prospects.



Golden Star Furnace



Emerson Furnace Blower

The Purveyor of Winter Comfort must now appeal to the Housewife. She is the one most vitally interested in keeping Grimy Dirt from Baseboards and Wall Paper, in saving her Carpets, Draperies and Furniture from Sandy Gritty Dust.

Heated, Filtered, Humidified Air forced to every corner of the Home at suprisingly low cost ushers in a New Era of Winter Contentment.



"Dustop" Air Filter

Headquarters for Air Conditioning Equipment

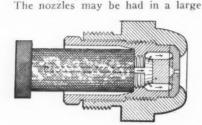
OSBORNO

DETROIT-CLEVELAND-BUFFALO

New Products

Atomizing Nozzles

A new line of pressure atomizing nozzles for use with either water or oil is announced by Detroit Lubricator Company, Detroit, Michigan.



assortment of sizes and in all standard dimensions,

The nozzles are so designed that they may be substituted for existing nozzles on most types of pressure oil burners or in washers. Standard type discs of super-hard metals are employed. The orifice is recessed in order to minimize mechanical injury but the nozzle may be cleaned with lacquer thinner or a thin toothpick.

New Control

In a small case 6 inches high by $3\frac{1}{2}$ inches wide and $2\frac{1}{2}$ inches deep is housed one of the newest contributions to air conditioning—an accurate thermostat, and an especially sensitive humidity control.

In the thermostat in this new control the bi-metallic actuating element tips a mercury switch thus making or breaking the circuit. It can be used on either low or line voltage circuits and operates on a temperature change



of less than 1 degree above or below the setting.

The actuating element of the humidity control is human hair. This element also tips a mercury switch capable of handling either low or line voltage current. This instrument will control to within 2% relative humidity.

The settings for temperature and humidity are made with the small knurled knobs on the front of the instrument. The temperature range is from 60 to 80 degrees F., humidity setting from 20 to 80% relative humidity, and the instrument is available

either with or without the humidity indicator scale.

W. A. Whitney Foot Press

A new Open Back, Inclinable Foot Press has been introduced by the W. A. Whitney Manufacturing Co., Rockford, Ill.

The No. 95 Foot Press is designed for the making of small duplicate parts, bending and forming operations and assembling work. The slide is dove-tailed into the frame with a gib



on the left hand side for adjustment and take-up. By simply changing one pin through the levers, it is possible to obtain three different strokes, 1½, 2 and 2½ inches. An adjustable counter-balance makes it possible to operate this press continuously without fatigue.

The entire Press is made from semisteel castings and weighs 350 lbs. A special leaflet describing this Press is available for the asking.

You Get Them In

WISE FURNACES



No. 40 Series

Write for Complete Information on the Wise Line and Take Advantage of Wise Construction Features and Wise Policies To Give You a Successful Heating Season.

AIR CELL FIRE POT SELF-CLEANING RADIATOR



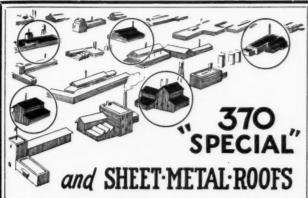
No. 20 Series

When you sell Wise's two lines of cast iron coal furnaces, No. 40 Series and No. 20 Series, you are offering your customers the two most important items in furnace construction—an air cell fire pot and a self-cleaning radiator. Both furnaces have these valuable features, which mean heating satisfaction to your customers; profit and reputation to you.

Also, when you sell Wise Furnaces, you have the protection of the Wise policy of selling only through the established trade.

Quality Furnaces at No Higher Price.

The WISE FURNACE CO., AKRON OHIO



OOK down upon the roofs in your community. Single L out those roofs that are sheet metal and then make it your business to do the painting job.

And keep this in mind—sheet metal roofs must be painted regularly in order that they continue to protect the buildings they cover. Sheet metal roof painting is business that is constant and profitable.

With the fact that roofs must be painted regularly already established, the question that is important to you is, which paint to use, to do the job most satisfactorily and economically.

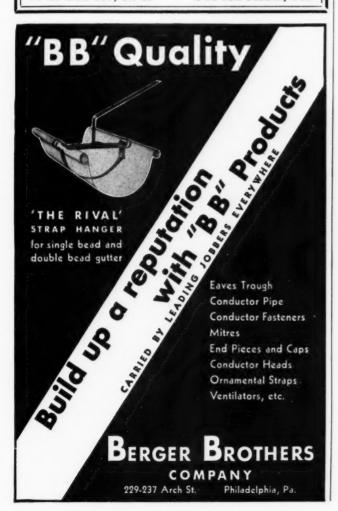
We suggest 370 "SPECIAL RED." Here is a paint, the inwe suggest 510 SPECIAL RED. Here is a paint, the ingredients of which, assure long life and protection and which is being recognized among buyers as an exclusive standard where quality is essential but where economy is stressed.

Other Thompson Products—Alumbrite—the new Aluminum Paint for Wood and Steel and Lin-O-Jap, the Perfect Reducing Oil for All Paint.

THOMPSON & COMPANY

P. O. Box 557, N. S.

PITTSBURGH, PA.





SENSATIONAL RESULTS AT LOW COST!



HERE is the quick, sure low-cost way to cure a sluggish warm air heating system. It is exactly what you need to meet complaints and give your customers efficient heating for a thoroughly practical price.

Cuts Fuel Bills

New All-Steel Wall Type Model



Every furnace-heated home should have a Victor Heat Booster. It completely answers the "cold room" problem and is also a big help in the fall and spring months in bringing the heat up faster and thus reducing the amount of fuel required to keep the home at a comfortable temperature. The Victor Heat Booster will sell itself and, in fact, you can offer it to your customers on a guaranteed basis of complete satisfaction or their money refunded.

Send for Samples

You can pull in lots of extra dollars this fall and winter by pushing the Victor Heat Booster. There are hundreds of prospects for this amazing invention right around you. Cash in on this money making opportunity. Send for your samples or further information today.

MAIL THIS COUPON TO-DAY!

VICTOR ELECTRIC PRODUCTS, INC.

716 READING ROAD, CINCINNATI, OHIO

Gentlemen: We want to see what profits we can make with your Victor Booster. Kindly follow our instructions indicated below.

- Our check in this square means we want you to ship us a set of samples (one each of both types) of your Victor Heat Booster.
- Our check in this square means we want more information from you before we order our samples.

Name of Jobber

NOTE: Dealer discount on Victor Heat Boosters is 35% from list. Direct purchases accepted on C. O. D. basis

New Products

New Furnace

Heating Systems, Inc., Joliet, Ill., announce their new Comfortmaker air conditioning furnace and system. The new furnace will be made in four sizes. The furnace is welded steel, gas



tight and is especially designed for hand fired coal, gas burner, oil burner or stoker application by changing the ash pit door and grates. All furnaces in the new line will be fully equipped with automatic controls, filters, direct connected twin blower, humidifier, air washer and de-humidifier complete in one casing. Cooling is provided for through an ice chamber in the rear of the furnace housing.

The company is preparing literature and data sheets and contractors are invited to write for copies and full information.

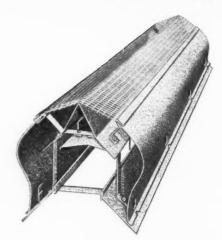
Condensing Units

To meet a wider range of commercial applications, the Westinghouse Electric & Manufacturing Company announce two new large capacity opentype condensing units.

The models are two and three HP units, use Freon for the refrigerant. Use of an oil pump, oil separator, valves in the head, directed flow of air over the compressor, and a compressor with small bore and stroke permitting higher speeds are features.

New Ventilator

A new device for lowering interior temperatures known as the Dexter "Heat Valve" has just been placed on the market by The Swartwout Company of Cleveland, Ohio. As the name implies it releases heat from building



interiors and permits replacement of hot air by cool air from the outside.

The heat valve is installed along the ridge of the roof and while hardly noticeable it permits an adequate opening along the full length of the building at its highest point where it is most effective. The valve thus utilizes the utmost stack effect of the building along its entire length. A damper is provided for opening or closing the device at will.

The Heat Valve is applicable to every type of building especially residences, schools, offices, commercial and industrial buildings where excessive heat is present.

A SUGGESTION TO CONTRACTORS ABOUT MAKING MORE PROFIT ON MANY OF THEIR JOBS

HUSSEY

There are two ways to make money in sheet metal contracting—get more jobs—and make more money on each job.

Let's talk about the latter.

Many of the jobs you take would be more satisfactory from the owner's standpoint if they were copper. The long life and freedom from upkeep and repairs would more than pay to "let the job go copper."

From your own standpoint, there is more of a working margin when the job is copper and that of course means large, immediate profits for And there is this to remember —a buyer remembers quality work long after he forgets the price that was paid. Copper jobs are always quality jobs and build prestige and good will

So recommend copper where copper is better—your recommendation will usually carry. And when it comes to copper requirements, you'll find our large stocks of sheets and manufactured items warehoused near you for quick action.

C.G.HUSSEY & COMPANY PITTSBURGH, PENNSYLVANIA

DISTRICT SALES OFFICES

BALTIMOR BUFFALO CINCINNATI

NEW YORK PHILADELPHIA PITTSBURGH

WAREHOUSES

CHICAGO

NEW YORK CLEVELAND ST. LOUIS PHILADELPHIA PITTSBURGH

MILLS AND EXECUTIVE OFFICE

PITTSBURGH

New Products

Drive Screw Nail

A new roofing nail, just appeared on the market as the invention of A. J. Deniston, Jr., is of the drive screw type, with a threaded shank, so that when driven, it turns under the successive blows of the hammer. In driving the nail, the fibers of the wood are not torn, but are pushed up tight against the threads. Since in service, the natural pull upon the nail is a straight pull, it follows that the nail



can be thus removed only by violent rupture of the wood fibers themselves.

Although this nail can be used advantageously for fastening various kinds of roofing—prepared, slate or tile—it was especially designed to pre-vent loosening of galvanized roofing. The nail has a "Lead Seal" under the head, which not only plugs the nail hole with lead, but covers the break in the galvanizing, and makes a per-manent seal against moisture and rust.

Tumbler Switch

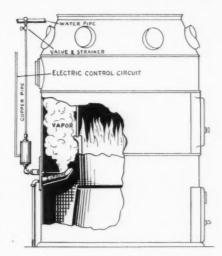
A compact, easily-installed starting switch, designed for use when handoperated control at the motor is required and intended for direct mounting on the built-in terminal box of standard G-E fractional-horsepower motors, has recently been announced as a new product of the General Electric Company.

The device, which is completely mounted in a substantial steel case and is provided with a positive snap-action mechanism, is simple to install. The switch is so mounted that only the tumbler handle extends beyond the motor profile at the side.

Spray Humidifier

Supreme Electric Products Corporation, 79 Mt. Hope Avenue, Rochester, N. Y., announce some improvements in their electrically controlled humidifier for warm air furnaces and air conditioning systems.

This humidifier is mounted in the bonnet of the furnace and operates on the principle of producing a fog of moisture due to the impact of a fine spray of water against a heated plate. The unit has a capacity of 20 gallons per 24 hours at 50 pounds pressure and will supply evaporation of from



8 to 12 gallons of water per day on intermittent operation. A humidistat is a part of the apparatus and responds to moisture content of air through the hygroscopic element which contracts and expands with moisture changes. Manual adjustment is possible over a range of humidity percentages. The humidistat is wired to operate in series with an automatic burner or with a fan so that spray is produced only when heating apparatus is operated.

Full particulars on this line of apparatus is contained in a leaflet which may be obtained by writing the com-



It will serve your customers as excellently as it serves America's Leading Industrialist



APOLLO ChromCopper

Stands the Gaff on

Drain boards Table tops Meat warmers Shelf covering Refrigerator linings

Range hoods

Write for sample and prices to APOLLO COMPANY

Box AA LA SALLE, ILLINOIS

Clothes chutes Reflectors Ice cream cabinets



REPAIRS to fit any

Heating Plant!

STOVE FURNACE BOILER

FIRE POTS GRATES

GRATES

Our Repairs Are Guaranteed to Fit or Money Refunded!

NORTHWESTERN STOVE REPAIR CO.

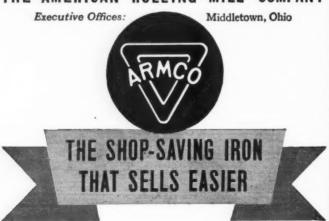
662 W. ROOSEVELT ROAD - - CHICAGO, ILL.



HERE is good news for every sheet metal contractor who uses Armco Iron and Steel Sheets. The popular Armco broadcasts return to a nation-wide audience over the vast NBC Network, beginning 6:30 P.M. Eastern Standard Time, on September 30. Your customers will be entertained each Sunday night by one of the greatest concert bands on the air. They will listen eagerly to the timely, interesting talks of the Armco Ironmaster. And—mark this!—they will be convincingly sold on the good qualities and economy of the Armco sheets you use.

Be ready to profit from this series of Armco broadcasts over twenty-seven stations of the NBC Red Network. Remind your customers and prospective customers of these regular Sunday-night programs at every opportunity. And in between broadcasts sell your skilful work with rust-resisting INGOT IRON and sell it hard. Look for the big announcement story in the September issue of *Ingot Iron Shop News*.

THE AMERICAN ROLLING MILL COMPANY



The Education of a Moujik

By IVAN NITCHEVO Chapter V

HESE mental gymnastics resulted in an idea. If a double cross could gyp him, perhaps a triple cross could be made to pay him dividends. So Theodore waited for an opportunity to "take" one of his competitors.

He had not long to wait. The Emergency Hospital was being figured and Theodore secured a set of plans and submitted a bid for the ventilating installation. When the bids were opened, it was found that the Meyer Ventilating Co. was low with a bid of \$10,000.00 and the Apex Sheet Metal Shop was next low with a bid of \$18,000.00. Then things began to happen. The Architect called Meyer into

his office and after much bickering they got down to the signing of the contract.

Then the Architect insisted that as Meyer was a thoroughly reliable contractor, it was un-necessary for him to



file a bond for faithful performance; therefore it was up to Meyer to deduct the cost of the bond, some \$400.00 from his contract price.

Meyer said no, he'd throw up the contract. The Architect then phoned the General Contractor what had transpired. Theodore happened to be in the office discussing another job, overheard this phone conversation. When the General Contractor hung up, Theodore went into a huddle with him and both of them worked fast between their ears.

The next morning the General Contractor dropped into Meyer's office. After sympathizing with him over the loss of his contract, he asked him if he would be interested in signing a contract for the ventilating installation on the Emergency Hospital for \$14,000.00.

Meyer, who had bid the job at \$10,000.00 thought him screwey, but when he laid before him a contract for the job at \$14,000.00, he was so elated that he signed it in a hurry and promised him a "fee" of \$500.00 for his efforts in his behalf.

The General Contractor then returned to Theodore. Together they went to the Architects office where a contract between the Architect and Theodore for the ventilating installation on the Emergency Hospital was quickly signed for \$18,000.00.

When the job was completed, Theodore banked his \$3,500.00 gravy. Meyer, having barely broken even on the job, yelled his wrath to high heaven, and the General Contractor, \$1,000.00 richer on his and Theodore's conniving, sat back and laffed and laffed and laffed.

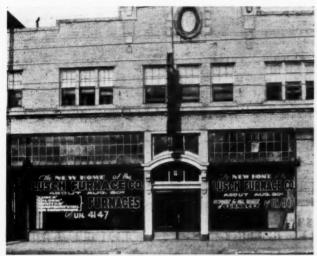
Contractor's News

Announcing the Lusch Furnace Co.

A long-term lease recently was closed by Charles A. Lusch, president of The Lusch Furnace Company, for the entire first floor of the building at 841 North High street, Columbus, Ohio.

For some time, Mr. Lusch stated, the concern has seen the need of larger quarters, which could be reached easily by the public and would provide proper facilities for service. A large display floor with double plate glass windows,

allows proper showing of conditioned air equipment, forced



air units, and various types furnaces and heating accessories

Mr. Lusch has been in the heating business in Columbus for 20 years, having been identified with The Lusch-McDonald Company and The Munkel-Lusch Company.

The firm carries a complete line of repairs for all makes of furnaces, including smoke pipe repairs, and parts of all kinds. In addition to The Lusch Furnace Company, the building will be occupied by the A. C. & F. Supply Company (Air Conditioning & Furnace Supply Company). It is a new company which has recently been formed to do an exclusive jobbing business in furnaces, accessories, pipe and fittings, and air-conditioning equipment.

Monarch Ventilating Co. Officers

The Monarch Ventilating Company, Chicago, established in 1908 by John R. Enlund, who died on August 21, 1934, will be continued as an active sheet metal, ventilating and air conditioning contracting corporation under the direction of Albert L. Weixel as president.

Mr. Weixel and Mrs. Enlund assure the business asso-

ciates, clients and customers of the Monarch Ventilating Company, that the principles of integrity, conscientious effort and satisfactory workmanship established by Mr. Enlund, will be continued.

Howard O. Nelson Resumes Business

Howard O. Nelson, 221 Cherry Street, Mankato, Minnesota, announces that he has opened up a shop to do furnace heating and general sheet metal work.

Mr. Nelson, or his immediate family, has been reading AMERICAN ARTISAN for 35 years and states that he cannot run a shop without the paper.

Company Changes Name

E. H. Olsen announces that Sheet Metal Products Company, manufacturers of conductor pipe, eaves trough and box gutters, and jobbers of sheet metal and hardware specialties, is the new name of the former Sheet Metal Products & Hardware Company.

Mr. Olsen announces that original policies will be maintained. The company is now incorporated.

Pickthe WINNERS



FRONT RANK is unique in that it burns kind of fuel equally efficiently and eco-ically. No matter what fuel is used, all t is burned and all the heat utilized. A range of sizes is available.



To meet present day buying demands, the warm air heating dealer is learning that his big opportunity lies in handling a complete line of furnaces ... a line which comprises a cast iron or steel furnace which will satisfy every taste and every pocket-book. The Liberty Line meets these specifications . . . and more. In the design and construction of every unit in the Liberty Line extreme care has been exercised to insure efficient operation, economical fuel consumption and long life. You will find that and long life. You will find that MELLOW and FRONT RANK will win enthusiastic customers for you . . . and that there's a gratifying margin of profit in every installation. Pick the winners! Pick the Liberty

Write for complete details . . . today.



WARM AIR FURNACE

All castings in the MELLOW Furnace are from special analysis iron; the danger of cracking and burnouts is eliminated and a long life of service is assured. Truly a cast iron furnace of merit.

LIBERTY FOUNDRY COMPANY, ST. LOUIS, MO.

F. MEYER & BRO. Co.'s Handy Pipe nd other needs for

installing warm air furnaces (including forced-air duct work) will be helpful to you in getting a real profit on the repair and improvement jobs that are bound to be done in your territory with the help of funds made available by the FEDERAL HOUS-ING ACT.



If you haven't already informed yourself as to how the plan works IN YOUR INTEREST, we urge that you do so at once.

Funds are now available to almost everyone for everything from new gutters and downspouts to a new or replacement furnace. All you have to do to get some really profitable business this fall and next year is to

> Wake up and Be on the Job

F. MEYER & BRO. CO.

1311-13 S. Adams St.

Peoria, III.

P. S. This is CASH BUSINESS for you!

News Items

Michigan Ass'n Members Die

F. T. Daly of Daly and Rutherford, Jackson, Mich., died Friday, July 27. On August 1, F. B. Harrington, of the Michigan Sheet Metal Works, Lansing, died suddenly. Both these men were charter members of the Michigan Sheet Metal and Roofing Contractors' Ass'n and had maintained membership continuously from the association's inception. Both men were also former presidents of the

Zinc Exhibits

American Zinc Institute, 60 East 42nd Street, New York City, announce that the educational exhibits of galvanized roofing will again be presented at various state fairs. These exhibits will feature "Seal of Quality" heavycoated galvanized sheets and exhibits will demonstrate the economy of heavy zinc coatings.

Exhibits were held in August at the Missouri, Illinois, Iowa and Wisconsin State Fairs and during September will be held at the Indiana, Nebraska and Kansas State Fairs and at the American Royal Live Stock Show, Kansas City, in October.

Revere at Century of Progress

Revere Copper and Brass Incorporated has installed an exhibit in the Paul Revere House, located in the Colonial Village at the Century of Progress.

The house itself is a reproduction of Paul Revere's house in North Square, Boston. Revere's exhibit occupies the living room of the house, a replica of the one in the original Paul Revere house. A section of the wall is shown cut out, behind which is shown an installation of Revere Copper Water Tube, showing the most modern type of plumbing which Paul Revere might have had if he were living today. Among the displays are included copper utensils, gift ware in copper and chromium, and small samples of mill products such as sheets, rolls, strips, rods, bars, tube, pipe, etc. The samples are displayed in cabinets of the early American period which are in keeping with the rest of the room. A framed portrait of Paul Revere copied from the orginal Gilbert Stuart painting



is displayed as are copies of letters between Paul Revere, Robert Fulton, and other notables of the time. The latter give an idea of the commercial correspondence of the

There is also an original wooden model of Paul Revere's first copper rolling mill.

News Items

"Russ" Allen Promoted

Russell M. Allen, formerly Chicago District Manager for the Allegheny Steel Company, has been promoted to the position of Assistant General Manager of Sales with headquarters at the main offices of the company in Brackenridge, Pa.

Penn Dealer Meetings

More than 2,000 dealers, salesmen, service engineers, and manufacturers attended the first series of meetings sponsord by the Penn Electric Switch Co., Des Moines, Iowa, according to figures anounced by Nelson Delavan, salesmanger.

salesmanager.

The metings were held to introduce the new Penn
Temtrol system of temperature control and to explain the

national advertising program.

A second series has just been announced and meetings will be held in the following cities on the following dates: Sept. 17, Hotel Robert Treat, Newark, N. J.; Sept. 21, Hotel Broadwood, Philadelphia, Pa.; Sept. 25, Hotel Yorktown, York, Pa.; Sept. 28, Hotel Bethlehem, Bethlehem, Pa.; Oct. 1, Hotel Providence-Biltmore, Providence, R. I.; Oct. 3, Hotel Kimball, Springfield, Mass.; Oct. 5, Hotel Bancroft, Worcester, Mass.; Oct. 8, Hotel Rice-Varick, Manchester, N. H.; Oct. 10, Hotel Kenmore, Boston, Mass.; Oct. 15, Hotel Vermont, Burlington, Vt.; Oct. 17, Hotel Syracuse, Syracuse, N. Y.; Oct. 19, Hotel William Penn, Pittsburgh, Pa.; Oct. 22, Hotel Ten Eyck, Albany, N. Y.; Oct. 24, Hotel Arlington, Binghamton, N. Y.; Oct. 26, Hotel Statler, Buffalo, N. Y.; Nov. 5, Hotel Netherland Plaza, Cincinnati, Ohio; Nov. 7, Hotel Claypool, Indianapolis, Ind.; Nov. 9, Hotel Keenan, Fort Wayne, Ind.; Nov. 13, The Neil House, Columbus, Ohio; Nov. 14, Hotel Commodore Perry, Toledo, Ohio; Nov. 16, Hotel Pantlind, Grand Rapids, Mich.; Nov. 19, Hotel Stevens, Chicago, Ill.; Nov. 21, Hotel Loraine, Madison, Wis.; Nov. 23, Hotel Blackhawk, Davenport, Ia., and Nov. 26, Hotel Pere Marquette, Peoria, Ill.

The Temtrol program which begins at 10:30 and is

adjourned at 3:30.

The company announces it has just released contracts for an extensive national advertising campaign in which they will feature the new Penn Temtrol System of temperature regulation.

The campaign will consist of regular advertisements in Better Homes & Gardens and an extensive full color series

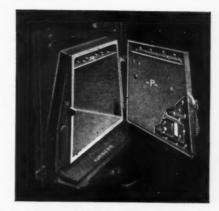
of direct mail pieces.

First advertisements will appear in October, the month in which the nationwide "Rebuild America" program being sponsored by the government under the National Housing Act will be launched. More than 250,000 extra copies of the October issue of Better Homes & Gardens will be distributed through leading utilities, contractors, building and heating dealers, etc.

Automatic Controls

(Continued from page 33)

This means we must choose a "happy medium." We arrive at the setting by considering the following points. We have designated our system for a pre-selected register air temperature. We calculate the temperature drop through our ducts and add this amount to our register air temperature to arrive at the setting we need to blow this pre-selected temperature air from the registers. Suppose we designed for 135 degrees register air temperature and have 15 degrees drop through our duct. To blow 135-degree air from the register we must then start the air from the bonnet at 150 degrees. Results indicate that this method of selecting the setting at which the fan goes into high speed is satisfactory.



The Niagara Smoke Consumer aids combustion. It helps cystomers get more out of their fuel. It is just one of many features that increase sales for Niagara dealers.

IT'S SIMPLE BUT IT WORKS

—and that's true of all Niagara Warm Air Furnace Engineering

THE Niagara Smoke Consumer is one of a number of features which, taken together, make up Niagara superiority and Niagara's well known selling possibilities. The speed with which a Niagara can be erected is another advantage that puts dollars in your pocket. From one-piece base to light, efficient radiator, the Niagara is the dealer's furnace.

We know how to build furnaces (we ought to, after 44 years' experience). We are committed to building them *right* (no other way pays). And we work only with and through responsible, legitimate dealers.

Have you received our latest price lists? Be sure to specify whether for Coal Furnaces, Gas Furnaces, or Air Conditioning Units (coal-fired or gas-fired). Niagara dealers cash in on all three types of business.

We are regularly shipping orders for Niagara repair parts within 24 hours of their receipt.

THE FOREST CITY FOUNDRIES COMPANY

2504 West 27th Street

Cleveland, Ohio

WARM AIR FURNACES

BUILD YOUR PROFITS this FALL Selling ROUND OAK **FURNACES**

Genuine Round Oak Repairs

MOISTAIR BLENDED-IRON a Quality All-Cast **Furnace**



In the complete line of Round Oak coal, oil and gas furnaces there is a heating plant to meet every requirement.



Wire or Write for Information

ROUND OAK FURNACE COMPANY Michigan

Distribution

Sioux Falls Corrugating Company, Sioux Falls, So. Dak.
Haw Hardware Company, Ottumwa, Iowa
Waterloo Metal and Manufacturing Co., Waterloo, Iowa
McIntyre Company, Fond du Lac, Wiscon

News Items

Death Takes Walter Donlevy

The industry will learn with regret of the death of Walter H. Donlevy of The Carter, Donlevy Company, Philadelphia.

Philadelphia.

Mr. Donlevy was born in Philadelphia in 1862, and graduated from the Central High School. In January of 1880 he entered the employ of W. F. Potts, Son and Company, and in 1900 with Warren Carter formed the firm of Carter, Donlevy and Company, Wholesale Distributors of Sheet Metals. On January 1st, 1930 Mr. Donlevy was elected the Chairman of the Board of Directors of The Carter, Donlevy Company which was created by a merger of Carter, Donlevy and Company; Gummey, McFarland and Company; and Riter Bros. and Company, Inc.

Mr. Donlevy was a Thirty-Second Degree Mason, a Member of the Methodist Episcopal Church, and for a number of years President of the Independence Square Building and Loan Association.

Building and Loan Association.

For twelve years, from 1914 to 1926, prior to when he was elected president of the association, Mr. Donlevy served as chairman of its Metal Branch which is now the National Association of Sheet Metal Distributors.

Death of George Bradbeer

Announcement is made by the Detroit Safety Furnace Pipe Company, Detroit, Michigan, of the death of the former president, George J. Bradbeer, on August 24.

Warm Air Register Code

Copies of the Code of Fair Competition for the Warm Air Register Industry, approved June 28, have been received from the United States Government Printing Office, Washington. The complete code is included in the pamphlet issued by the government which may be secured from the Superintendent of Documents, Washington, D. C., price five cents.

Proper procedure for setting up a code authority for the industry is outlined in Article VIII, covering Trade Practices and a large number of practices held unfair are itemized. Among these unfair practices are false marking, misleading advertising, interference with contractual relations, piracy of trade marks, etc. Additional articles in the code cover price guarantee, publication of price lists and terms and cash discount sales.

Waterman-Waterbury Representative

The Waterman-Waterbury Company, Minneapolis, announce the appointment of Marvin C. Barnum as representative for the New York and New England area. Mr. Barnum has opened offices at 1133 Broadway, New York City, in which he will display Waterbury equipment, including the oil burning furnace and a complete "Comfortrol" winter air conditioning unit. Mr. Barnum is a member of the A. S. H. & V. E. and a newcomer in the furnace field.

Toncan Distributor

A recent addition to the country-wide organization of Toncan Iron distributors is Buhl Sons Co., Detroit, Mich., according to announcement by N. J. Clarke, Vice President in Charge of Sales, Republic Steel Corp., Youngstown, Ohio. Complete warehouse stocks of Republic's Toncan Iron will be maintained by the new distributor.

New Servel Distributor

Announcement has been made by Servel, Inc., of the appointment of Townley Metal & Hardware Company, of Kansas City, Mo., as distributor for air-conditioning and commercial refrigerating equipment.

The Townley company, which celebrates its 50th anniversary this year, is a well-known firm in the Kansas

News Items

A. C. Roy Named Manager by G. E.

A. C. Roy has been appointed manager of the advertising division of the Air Conditioning Department of the General Electric Company, succeeding W. A. Bowe, resigned, it has been announced by J. J. Donovan, manager of the department.

of the department.

Mr. Roy entered the employ of the Edison Lamp
Works of the General Electric Company in 1916, following his attendance at University of California and Cooper
Union. As a sales engineer he assisted in the lighting of the first airways, and invented an early type of electric air-

Timken Regional Conventions

The Timken Silent Automatic Company held its annual mid-year regional conventions July 30 to August 6, with one-day meetings held in Baltimore, Philadelphia, New

York, Boston, Utica, Detroit and Chicago.

According to T. A. Crawford, Advertising and Sales
Promotion Manager, approximately 1,200 dealers and salesmen attended. An interesting and varied program was
offered by company executives and guest speakers, who presented talks covering every phase of the merchandising

of oil heating.

Featured at the meetings was the Timken Silent Automatic Air Conditioning Oil furnace, a new unit designed complete winter air conditioning. Demonstrators to give complete winter air conditioning. Demonstrators were set up at all meetings to show how the air is filtered, humidified, warmed and positively circulated through the home to provide a complete change of air every twelve

Pipe and Fittings Code Members

At a meeting of manufacturers of furnace pipe and fittings held at Cleveland, Ohio, on July 18th, the following were elected as members of the Code Authority for the industry, namely:

A. W. Glessner, The Excelsior Steel Furnace Henry N. Clark Co., Co. 118 S. Clinton St.,

Chicago, Ill. Carl Weyand, Henry Weyand Company, 45 Brown Place, Waterbury, Conn.

R. G. Harrison, Reeves Manufacturing Co., Dover, Ohio.

George E. Hunt, 56 Union Street, Boston, Mass.

Aaron Cohn, Acme Tin Plate & Rfg. Sup. Co., 10th & York Sts., Philadelphia, Pa.

E. S. Moncrief, Henry Furnace & Foundry Co., Cleveland, Ohio.

Building Material Survey

The Department of Commerce, Washington, D. C., has issued a brief resume taken from the Real Property Inventory to show the principal materials used in residen-

tial construction.

In brief, this survey indicates that more than 81 per

cent of all dwelling structures are of frame construction.

The survey shows that in the 63 cities covered there are few towns in which wood is not the dominating material. The survey is arranged by geographical division giving the number of dwelling structures and the number of structures of the various types of materials

Contractors interested in the facts contained in this survey may write us for specific information.

Pilcher, Niess Join Bettendorf

The Micro Corporation, manufacturers of Bettendorf Automatic Oil Burners, announce the appointment of Z. H. Pilcher, as manager of their Chicago office and Lee J. Niess, as supervising engineer, with headquarters in the Chicago



*Blood Pressure

When you're in a hurry for Sheet Metal Products ...

OT only does Globecontrol every step in the fabrication of sheet metal products bearing this age-old, time-honored trade



mark, but Globe prides itself upon its stocks always ready for instant shipping, whether the job be large or small. Sheet metal users everywhere have learned to depend on Globe for all their requirements, because the name Globe is their assurance of highest quality, unsurpassed workmanship and dependable service. You'll find it to your advantage to look to Globe for all your sheet metal needs. Write today for listing of Globe sheet metal products.

The Globe Iron Roofing & Corrugating Co. Cincinnati, Ohio

il () K R RUILDING PRODUCTS

MUELLER

CLIMATOR Air Conditioning Equipment

Time-tested air conditioning systems in a range of capacities to take care of any job in a way that will build business for you.

CLIMATOR #2 consists of separate washer, filter and blower of specified capacities.

CLIMATOR #3 is an assembled combination of washer, blower and filter, in one size only.

CLIMATOR #4, blower and filter only, is a competitively priced unit built in two sizes, for smaller homes.

CLIMATOR is the complete line of proved efficiency.

FURNACES

Most Complete Heating Line in the Industry

Mueller-built furnaces and boilers for all fuels—coal, oil, and gas.

Gas-fired units for steam and hot water heating.

A full line of furnace fittings, registers and grills, wood-burning furnaces, horizontal tubular heaters.

Why buy your heating stock here and there when you can get it all from our house, whose products have been standards of quality for 77 years?

There is a Mueller Jobber near you. Write us and we will put you in touch with him.

L. J. MUELLER FURNACE COMPANY 2005 W. Oklahoma Ave., Milwaukee

Jobbers note: A few good territories are still open. Inquiries invited.

MILWAUKEE

LETTERS

rom OUR READERS

Air Conditioning

A S luck or misfortune would have it, I found myself in the middle of a business trip when the recent heat wave broke over the Central West, and not only that, but I had just reached that part of my territory where every day a new record was being broken.

It is needless to tell about the terrific heat that was encountered driving along the roads and even greater heat in the cities, but I found myself (like thousands of other people) looking for relief. On registering at a hotel every one wanted a room on the shady side of the house, ordered fans and ice water, and then got into a cool tub or shower and stayed there as long as possible.

A thing that bothered me was that in most hotels the bell-boy would take me up to a room that was many degrees cooler than the outside temperature due to the fact that the windows were down and the shades drawn and proceed to throw open the window. In a very few minutes the room was as hot as the outside. I finally got to the place where I would make a dive for the window and literally sit on it, in order to keep the dime snatcher from opening it up.

Another thing I noticed in taverns and small business establishments was that the fans (in most cases the Man Cooler type) were placed in front of an open door or window. The breeze was like a blast from a furnace. At the same time most establishments had a rear door which opened to a cooler court. Fans placed here could have brought cool air in and pushed the hot air out instead of the reverse action.

I do not believe I ever saw so many new signs in all my life, all telling about air conditioned places. Restaurants, taverns, shops, trains, airplanes, buildings and even a hotel had air conditioned four floors of guest rooms.

I found myself having breakfast, lunch, dinner and a cool drink every so often in an air conditioned establishment. I even left my car in St. Louis and took an air conditioned train to Kansas City in order to escape the heat. Not being much of a movie fan, I was surprised to find myself looking up a movie that was air cooled and spending several hours in it.

I checked one day to see how much of the time in 24 hours I was spending in air conditioned places and was surprised. Here is one typical day:

- 1 hour for breakfast in air conditioned coffee shop.
- 1 hour and 15 minutes in air conditioned restaurant for lunch.
- 1 hour and 30 minutes in air conditioned restaurant for dinner.
 - 2 hours in air conditioned movie house.
 - 9 hours in air cooled sleeper.

14 hours and 45 minutes of the 24 were spent in comfort and this helped to stand the heat of the day.

I heard any number of people ask for an air conditioned hotel room, and it won't be long before they will be able to get them. I found people leaving their hotels where the restaurants were not cooled to go to other eating places where they could get relief.

In talking with people I usually mentioned air conditioning and everyone had stories to tell about this, that or the other place they were to, where air conditioning had been installed and how they wanted to air condition their home as soon as possible, or what they had already done in that respect.

I believe the warm air furnace dealer can capitalize on these past, present and probably future heat spells by talking up air conditioning now, when the memories of this terrific heat are still in the consumer's mind.

Yours for more air conditioning.

A Hot Traveler.

Henry Ford Buys Forced Air

(Continued from page 16)

the small paddle wheel which turns when the fan runs and keeps the damper closed. When no air is passing, the guide wheel stops and permits the damper to open. A one-half horsepower, condenser type motor, is used and the pulleys are so arranged that the fan turns at 350 R.P.M. at which speed the fan delivers 2,000 C.F.M.

Heating System

The furnace and blower in the furnace shed connect with the house piping system by means of an underground, concrete-lined duct. Through this vault two large galvanized iron ducts are carried—one for the supply and the other for the return.

Each of the main ducts through the tunnel is of double wall construction. The inner shell was made up first in convenient lengths. Then spacer angles were formed in galvanized iron and the outer shell slipped over the inner. Drive cleats were used to lock sections along the top and bottom and drive, stiffener angles were used on both sides.

An interesting feature of the piping plan is the large number of returns. Practically every window in the house has a return located under it in the baseboard. Supply consists mainly of one register to each room, with two registers in the larger rooms.

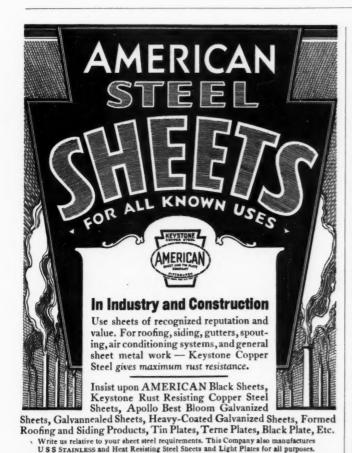
The piping plan shows that all ducts are 4 inches deep. The floor joists are all 6 inches and as shown on a detail an additional 4-inch strip was nailed along all joist bottoms. The duct crosses joists in this 4-inch space so that when finished the ceiling will be

plaster with piping concealed.

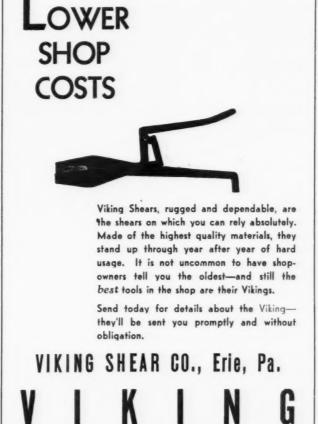
Duct construction used all cleated joints and on large ducts stiffener angles were employed top and bottom. All duct work was fabricated on the job from flat sheets. Each section was laid out and cut and then assembled.

In operation during the heating season an automatic control system maintains heat in the furnace at all times. The fire control is set to keep furnace bonnet temperatures at 175 degrees which gives a register temperature of 105 degrees. The thermostat in the living room starts and stops the blower and has no connection with the fire.

All piping on the job was sized by the Standard Code using the factor 5 in place of the factors, 9, 6 and 5 used for gravity flow. The velocity at the registers is 165 feet per minute. On test a 6-degree temperature between ceiling and floor was found. Six air changes per hour are used.



AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.



Code Authority Progress Report

(Contined from page 17)

In addition to the state zone various local zones have been organized and local code authority committees appointed. Full information on this organization will be published in a succeeding issue.

A Regional Code Administration Board for the Metropolitan New York area to administer the Code of Fair Competition has been established with the following individuals as members of the committee: Richard Ahearn, Western Waterproofing Co., 1730 Grand Central Terminal, New York: Fred J. Brundin, 102 Ralph St., Bergenfield, N. J.; George E. Carlson, 262 Bay Ridge Ave., Brooklyn; Charles H. Derksen, Bronx Metal Ceiling Co., 402 E. 152nd St., Bronx, N. Y.; Richard H. Frevberg, 2308 Second Ave.,

New York; Martin H. Donovan, M. H. Donovan & Co., Inc., 31 Tillinghast St., Newark, N. J.; Lionel E. Herrmann, Herrmann & Grace Co., 671 Bergen St., Brooklyn; Joseph Rose, Structural Waterproofing Co., 285 Madison Ave., New York; Alfred J. Schmitt, Geo. E. Nettleton, Inc., 22 Hempstead Ave., West Hempstead, L. I., N. Y.; W. F. Schreck, Schreck & Waelty, Inc., 27 Hague St., Jersey City, N. J.; R. J. Tobin, Tilo Roofing Co., 370 Lexington Ave., New York; F. J. Townsend, E. H. Nelson, Inc., 160 Summerfield Ave., Scarsdale, N. Y., and Herman Weinberger, 1157 East 38th St., Brooklyn; Richard H. Freyberg is chairman of the Board; A. H. Jeter is vicechairman; W. F. Schreck is treasurer and Herman Weinberger is executive secretary.

Fox Valley Anniversary

On September 10 the Fox River Valley Sheet Metal and Furnace Contractors Association held the first anniversary dinner of the organization. Approximately one hundred members and guests gathered in Aurora to cut the birthday cake and in the words of President Jack Stowell "accept this piece of cake as communion and take home with you the thought that as this candle burns so flames our feeling of friendliness for one another."

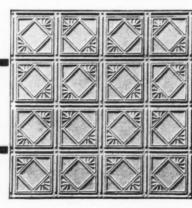
Officers, directors and guests offered congratulations and pledged themselves to bigger accomplishments in the years to come. Under the leadership of the honorary sergeant-at-arms Mark Leedy, Walter Eisler was initiated a member of the B of B (brother of business). Story tellers of local fame entertained the gathering with stories and jokes during intervals in the more serious parts of the program.

The association was formed just one year ago and has grown into one of the aggressive organizations of the middle west. Members represent towns along the Fox River from Elgin to Ottawa.

HERE'S BUSINESS for SHEET METAL CONTRACTORS

BULLETIN

Rents continue to risevacant property being reconditioned. Federal Government puts power back of building program.



Write Canton For Sales Helps Our records show more steel ceilings being sold. The reason:—see bulletin above plus aggressive selling by metal contractors.

Steel ceilings are a live business with Canton's new smart designs that are so clean, safe and pleasing in appearance.

Let Canton help you sell ceilings
—increase your profits!

Sold through leading sheet metal jobbers.

CANTON STEEL CEILING CO.

Warehouse Service: 497 West Street, New York, N. Y.



Boomer Boiler Plate Furnaces

Also made with duplex grates and upright shaker.

Have been successfully made for 22 years. Where introduced have given satisfactory service. The fire pot liners are the best we can buy and we know of several Boomers that still have the original liners in, which are 22 years old. We have been making cast iron Boomers for 50 years.

If you are interested in selling a strictly high grade furnace, ask for prices and agency.

Nothing but the best of material enters into the making of Boomers.

When repairs are needed, avoid risk of dissatisfaction by ordering direct from the original patterns. Prices are low.

We sell to legitimate dealers only,

THE HESS-SNYDER CO., MFRS. Massillon, Ohio

New Literature

Attic Ventilation Leaflets

Two new leaflets on attic ventilation just off the press are announced by Autovent Fan & Blower Co., 1805 North Kostner Ave., Chicago, Ill.

The first leaflet, Sheet CV-34, is for the dealer and describes the company's "Coolvent" system of ventilation.

The text in this leaflet explains a system where grilles located in the ceiling of the second floor hallway are connected to a fan which discharges into the attic space and the pressure thus built up escapes through attic windows or specially constructed louvres. A second type of installation shows the fan mounted at one of the attic windows and pulling air from the entire attic space which, in turn, is connected by grilles to the rooms beneath. Typical problems such as loose attics are covered. A table of data for the new Autovent fan especially designed for attic ventilation gives complete information on capacities, horsepowers, prices, the range in cubic contents, full dimensions of the fan, sizes of grilles and other necessary information.

The second leaflet designed for the home owners explains the advantages of attic ventilation and how this economical type of cooling can be applied to the average

Text explains the temperature drop occurring after sun-down, how heat storage in walls, attic, ceilings and the house in general prevents interior temperatures falling as rapidly as outdoor temperatures and explains how the withdrawal of air from the rooms and from the attic permits interior temperatures to drop rapidly.

Suggested methods of application are shown by drawings and explained fully.

The Autovent Company will mail copies of these leaflets to contractors interested in this subject or will handle a complete engineering design of prospective installations.

New Peerless Foundry Catalog

Peerless Foundry Company, 1845 Ludlow Avenue, Indianapolis, Indiana, announce catalog No. 2 covering Peerless warm air heating and air conditioning systems

This new catalog covers in detail the construction of Peerless steel furnaces and their special features with illustrations of the various furnaces manufactured. parts are also explained and shown throughout the booklet. The Peerless air conditioning units and furnaces cased

for application of the units are covered by text and accom-Peerless are itemized for ready reference.

The booklet also contains the Ninth Edition of the Mechanical Warm Air Heating Code and some special

tables used in heat calculations.

Copies are available on request.

FIRELANDS AIR CONDITIONING METER A meter designed especially for testing and balancing domestic forced air heating systems. Will establish C. F. M.,—Velocity—Static Pressure — Resistance thru filters or duct system stem. Scale is graduated to 8 readings for e a c h .01 - inch water gage pressure, from 0 to .125, with corresponding velocities due to pressure. Full gage range, .5 inch. **Firelands** Manufacturing Co. Price \$18.50 Room 206 Money back if Citizens National Bank Bldg. Norwalk - Ohio

not as repre-sented.

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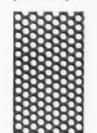
Brass, Bronze, Copper, Steel, Stainless Aluminum, Monel, Zinc, Tin Plate, Lead, or any other sheet material perforated to your order. Per-forations in rounds, oblongs, squares and special shapes. Complete stock of brass and tin in small sizes.

Accurate, durable product. Send us your next specifications.

FOR ARCHITECTURAL GRILLES

RADIATOR ENCLOSURES

GUARDS And for all screening and sizing operations







5649 Fillmore St., Chicago, Ill. New York Office, 114 Liberty St.

HESS FURNACE AIR CONDITIONER **BLOWER FILTER UNIT**



BENEFACTOR BLOWER FILTER **FURNACE**

> Here's a winner, a combination of Benefactor welded steel furnace and Hess Blower Filter Unit, at a price your customer can afford.

Hess or Benefactor Welded Steel Furnaces, of modern rectangular shape, represent the best in quality and performance. The Benefactor is our price leader. Investigate—it will make profits for you.

WRITE FOR DEALER PORTFOLIO

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LEVER WHITNEY PUNCHES

No. 4B PUNCH



Length—8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds Punches and Dies—A** unches and

No. 6 PUNCH



Length — 26% inches. Capacity — %-inch hole through %-inch iron; especially adapted for button punching or templet work. Punches and dies %" to 2" by 32nds.

No. 91 PUNCH

h — 34 inches. Ca
y — 36-inch hole
gh 46-inch iron.
hes and dies in sizes
36 to 38 by 64ths.

No. 1 PUNCH



CHANNEL IRON PUNCH



Companion to No. 2 Punch. Every part of the two Punches Inter-changeable, including punches and dies. Ca-pacity — ¼-inch hole through ¼-inch iron.

ROCKFORD, ILL



tractors.

Capacity — %-inch hole through %-inch, 1-inch hole through A-inch and 2-inch hole through %-inch iron. Depth throat

We have tools for every purpose needed by Sheet Metal Con-





USE IT FOR PROFIT

Liquid, Paste and Core-Solder



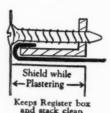
Rubyfluid makes soldering so simple and gives such splendid uniform results that it is cheaper to use it than to do without it. A request on your letterhead will bring a liberal trial sample.

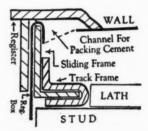
THE RUBY CHEMICAL CO. 74 McDowell St., Columbus, O.

New Literature

Air Conditioning Registers

The Auer Register Company, 3608 Payne Avenue, Cleveland, Ohio, have prepared a leaflet describing the company's air conditioning registers. The features of these registers are a slide frame, no streak installation, and ease of application. Photographs and sketches show the various registers in this new line with details of proper application and full information on sizes, finishes, face designs and prices is included.





The Auer company also announce register booklet No. 34, which will be furnished gratis to the trade. The book is designed to be placed in envelopes with bills, letters, etc. It shows a complete Auer line of register faces and grilles and itemizes the merits of the various items.

Readers may obtain copies on request.

Split Phase Motors

Holtzer-Cabot Electric Company, 125 Amory Street, Boston, Massachusetts, announce a complete leaflet covering the type RWS Split Phase Motors designed especially for such equipment as fans, blowers, light machines, oil

The leaflet gives a full description of the general construction, design and characteristics of these motors with illustrations of typical applications. Specifications are con-

Copies may be obtained from the company.

Oil Heating Equipment Manual

A manual of oil heating equipment for architects and engineers is announced by Gilbert & Barker Manufacturing Company, Springfield, Mass. This 24-page manual covers such points of design and installation as proper thermostat location, selecting storage tank sizes, location of storage tank, chart for fuel consumption, degree day chart for determining oil requirements and in detail the Gilbarco automatic conditioned warm air unit with full specifications and performance charts. The Gilbarco boiler unit and the Gilbarco oil burners are also covered by full unit and the Gilbarco oil burners are also covered by full specifications and operating data, Contractors wishing a copy should address the com-

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BRUNETT PATENTED HEAT UTILIZER

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Will Increase Your

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BROWN SHEET IRON & STEEL COMPANY

Pioneer Welders of the Northwest

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New Literature

Debunking Air Conditioning Fallacies

Russell Electric Company, 340 West Huron Street, Chicago, Illinois, have prepared a leaflet entitled "Debunking Popular Fallacies—Plain Facts for Fancy Dealers," in which the company undertakes to present some of the popular fallacies and show why these ideas do not possess any merit. Among the various facts debunked are the following:

"Clock thermostats seldom justify their expense" University of Illinois bulletins are used to show how much fuel saving is actually secured by setting down the temperatures at night.

"Furnace fans are of negligible value in summer cooling"—again University of Illinois bulletins are called upon to give the cooling effect obtainable with furnace fans in winter heating systems.

"Air washing is full of pitfalls"—explains such troubles as too much humidity in summertime when cooling is attempted, the trouble of supplying humidity on intermittent fan operation, effect of cold water in winter and warm water in summer and cost.

'Thermostats that 'anticipate'" is a section explaining the general operating characteristics of this type of apparatus and the problems encountered in attempting to secure economical heating.

Considerable space is devoted to discussion of various

types of home humidifiers, such as portable, wick, spray,

water pans and other devices.

Under stack control explanation is given of the advantage of controlling the fire directly from stack temperatures as compared to control indirectly by bonnet air tempera-

tures.

The Russell Company will mail copies of the leaflet to contractors requesting them.

J. M. & L. A. Osborn Company Price List

The J. M. & L. A. Osborn Company, 1541 East 38th Street, Cleveland, Ohio, announce their new stock list No. 34.

This stock list, as in previous issues, gives complete information on all the various items handled by the Osborn Company. Sheets of all kinds, roofing materials, perforated metals, metal ceilings, drain pipe and accessories, furnaces and accessories and machines are illustrated and itemized with full information and prices in the book.

with full information and prices in the book.

Copies may be obtained from the company.

Cleaning Campaign Literature

The Arco Vacuum Corporation, Division of American Radiator Company, 40 West 40th Street, New York, N. Y., has made available for contractors a folder containing the has made available for contractors a folder containing the various types of publicity which the company will furnish those wishing to conduct a furnace cleaning campaign. All of the various folders, leaflets, identification cards, advertisements, mailbox stuffers, signs and personal letters are shown in the folder together with prices in quantity lots. Contractors interested in literature on furnational contractors interested in literature on furnations. nace cleaning campaigns may secure copies of the folder from the company.

Steel Furnace Leaflet

U. S. Pressed Steel Products Company, Kalamazoo, Michigan, have prepared a new leaflet "Furnace Facts. The company announces that this booklet contains information on certain points of furnace design and construction

which are highly important to every dealer.

The characteristics of various types of cast iron and steel used in furnace construction are explained clearly. Various methods of welding, riveting and caulking are explained and shown with information on the characteristics of the various methods and laboratory reports on strengths, etc. Three common types of furnaces—steel round radiator, steel back radiator and cast iron round radiator-are shown in illustrations which purport to give an explanation of air travel through the casing with these three types of fur-naces. Several types of joints found in various furnaces are explained and illustrated.

The leaflet shows how the design and construction of the U. S. Pressed Steel furnace meets the common disadvantages of other types of furnaces. Copies may be obtained on request.

SELL
HUMAN
COMFORT
PEERLESS
AUTOMATIC HEAT
Get your copy of
"MORE COMFORT
without KNEE ACTION"
The Peerless Foundry Co.
Indianapolis, Ind., U. S. A.

"Talk About Profitable Repair Orders

and Cleaning Profits with the TORNADO Furnace and Boiler Cleaner

"My TORNADO Furnace & Boiler Cleaner has brought me more profitable repair and replacement business than I have had in years in addition to hundreds of dollars profit on the cleaning. In our 35 years in business it is the most profitable investment we have ever made." So says the General Repair and Equipment Ce., Elizabeth, N. J.

Hundreds of other TORNADO users are also cashing in on the splendid profits to be many with the TORNADO. You too can are real moorey with the TORNADO. So come to the second property of the TORNADO. Send in at ones or complete details and also for the facts proving Breuer's TORNADO to be assupported cleaner with the most complete tools (chimney cleaner with the clearled)—No obligation—Write us TODAY for free trial offer.



Breuer Electric Mfg. Co. 865 Blackhawk Street, Chicago, Ill.



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IMMEDIATE SHIPMENT FROM STOCK

More than twenty kinds of prime quality sheets are carried in stock. There is a special sheet for every purpose. Also Bars, Angles, Rivets, Bolts, Tools and Metal-Working Machinery. Write for Journal and Stock List

JOSEPH T. RYERSON & SON INC

MILWAUKEE JERSEY CITY BUFFALO PHILADELPHIA ST LOUIS CINCINNATI CLEVELAND BOSTON

FOR THE atisfactory FURNACE INSTALLATION

The most satisfactory furnace installations result from the use of Walsh Asbestos Furnace Cement. No longer is it necessary to risk your reputation on furnace cements of questionable merit . . . just use Walsh on every installation and repair job.

•Walsh Asbestos Furnace Cement is furnished in 1, 2, 3, 5, 8

•We also make Furnace
and 10 lb. cans; 25, 50,

Tile and Fire Brick.

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No. AC-10



Automatic. Adaptable-fits any round or rectangular, pitch top or straight side casing. Cast iron pan rust resisting finish presents extra large evaporating surface. Simple quiet valve easily adjusted for any amount of water. Air seal cover an improved feature.

Order today

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FOR industrial buildings, schools, homes, theaters, etc. Made in 14 different metals. Constant ventilation - no noise -no upkeep.

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New Literature

New Penn Catalog

A new 42-page catalog, listing complete specifications on the new Penn Temtral system of temperature regulation and other automatic switches for the control of heating equipment, has just been released by the Penn Electric Switch Co., Des Moines, Iowa. It makes public for the first time the complete schedule of prices on various new Penn Temtrol models, and includes a special offer on the company's new Display Demonstrator Set.

The Catalog also completely describes the principle of Temtrol operation, with an eight page article by Nelson B. Delavan, Sales Manager, and L. M. Persons, Chief Engineer, of the company, which was originally presented as an illustrated lecture before the 1934 Convention of the American Oil Burner Association.

Copies of the Catalog are being mailed to more than 2,000 automatic heat dealers, and are available on request.

Power Squaring Shears

Niagara Machine & Tool Works, Buffalo, N. Y., has prepared Bulletin No. 71-E covering power squaring shears. As in previous Niagara catalogs, photographs of the

various machines with accompanying descriptions of the design and operation and full details on specifications are

Contractors may obtain copies from the company.

Sturtevant Leaflet

The B. F. Sturtevant Company, Hyde Park, Boston, Mass., announce two new catalogs-No. 373-1, Vortex Furnace Cleaner and No. 295-1, Air Washers.

The furnace cleaning booklet points out the general reasons for contractors engaging in this type of activity. The equipment manufactured is shown in illustrations and explained in detail in the text. Accessories are illustrated and itemized and cut-away views show the general construction.

The air washer catalog gives complete information on all the types of units manufactured by the company, with specific information on nozzles, nozzle assemblies, filters, eliminators, housings, etc. Many interesting installations

The last part of the book contains complete specifications for the various types of air washers.

Contractors are invited to write for copies.

"Air Conditioning for Your Home"

new booklet, under the above title, is announced by the Williamson Heater Company, Cincinnati, Ohio. The booklet is an interesting presentation of the advances in heating and in popular language describes the various phases entering into step-by-step air conditioning. All of the variour factors of heating comfort and also of air conditioning, such as air movement, humidity, cleanliness, heat, cooling, etc., are described in language which the home owner can understand. Each step in air conditioning is taken up individually and the apparatus which makes this possible is shown and described. Thus, the prospect is shown furnaces, blowers filters at with full explanation of their uses in a blowers, filters, etc., with full explanation of their uses in a system.

Humidification and automatic control is explained in detail and the apparatus supplying these advantages described. A page is devoted to the benefits of air conditioning and, on this page, all the advantages which the industry has discovered are itemized.

The last part of the book describes the Williamson air conditioning system with full explanation of the apparatus manufactured. Typical installations are shown and methods of installing modern systems are explained.

Contractors may obtain copies by addressing the company.

New Literature

Chemical Formulary

A book of more than 600 pages, giving in condensed form a collection of valuable, timely and modern practical formulas for making thousands of products in all fields of industry, has been placed on the market by the Chemical Formulary Company, Bush Terminal Building No. 5, Brooklyn, N. Y. Information is available from the publisher.

This encyclopedic handbook contains thousands of formulas for making preparations in every field of industry. For example, there are more than 130 different formulas for adhesives with proportions and directions for preparation. Such objects as alloys, antiseptics, bleaches, boiler compounds, cleaners, paints, plastics, solders, solvents, etc. are all covered in detail.

The book is so arranged that the Table of Contents gives alphabetical arrangement of the various formulas covered in one general group. In the main text each formula is carried under a heading and the materials used in the formula with proportions and methods of mixing are given.

Conversion Burner Leaflet

A new leaflet "Why Not Enjoy Perfect Heat" for consumer reading will be mailed to contractors by the Barber Gas Burner Company, 3702 Superior Avenue, Cleveland, Ohio. The leaflet describes the advantages of gas heat including use of the basement, elimination of dirt, dust and firing work and shows typical application of the Barber conversion burners to boilers and furnaces. Full descriptions of the features of this equipment are contained.

Zinc-Alloy Sheet Leaflet

The Inland Steel Company has just published a folder describing and illustrating the uses of Inland Zinc-Alloy Steel Sheets. These sheets are zinc coated but are distinguished from galvanized sheets. By the process of coating, the zinc is alloyed to the steel base. There is no distinct dividing line between the zinc and the steel. Hence, an Inland Zinc-Alloy Steel Sheet will withstand fabrication and rough service without flaking, and also will withstand high temperatures. The zinc does not arrange itself in spangles, is very smooth but not glazed. Finishes such as paint, art lacquer, and enamel adhere firmly, thus enabling a manufacturer to combine beautiful finishes with the rust protection of a zinc coat.

Electric Tool Catalog

A new catalog, No. 64, covering the complete line of electric tools of all types has been published by Stanley Electric Tool Company, Inc., New Britain, Conn. Contractors may obtain a copy of the catalog by addressing the company.

Included are illustrations and descriptions with full operating information on various types of electric products.

FURNACE REPAIR PARTS

Made by National are made to fit the job. Parts made to fit only new furnaces will not do as well. "Nothing is obsolete with National."

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All come back to the Lenox. Famous for good food, homelike comforts, perfect service.

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Box and Pan Brake Power Squaring Shear
STEEL BRAKES—PRESSES—SHEARS
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7404 LOOMIS BLVD. CHICAGO



... HAVE YOU HEARD the one about the traveling salesman?

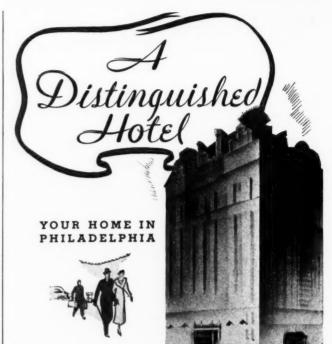


Hewent to be dat the William Penn and slept twenty years! Well, maybe that is a little exaggerated. But anyway, the beds at Pittsburgh's number one hotel are so comfortable you don't ever want to get up. The food in the four famous restaurants is equally exceptional, and the prices reasonable. Quiet, well-furnished rooms, \$3.50 single; \$5.00 double, all with bath.

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Sales Manager and Salesman

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FOR SALE—1-8 SECTION SMOKELESS cast Utica Steam Boiler, good as new, price right. Have to move same within 30 days. Address, Ed. Knabe, Rock Falls, Illinois.

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ACCURATE MFG. WORKS Chicago, III.

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Have you seen the new CHICAGO STEEL FOLDER BRAKE?

Lengths, 36'-42' Capacity 20 Ga. Will bend heavier metal than a folder. Will bend channel bends smaller than

Investigate this machine! Prices and details sent on request.

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Patents and Trade Marks Philip V. W. Peck

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Write for Price List. Standard Sizes Carried in Stock for Immediate Shipment.

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FURNACE AND AIR CONDITIONING

SALESMEN

TO SELL

Nationally Known Manufacturers

NEW LOWEST COST

TIME PAYMENT PLAN

NO FINANCIAL STATEMENT NON-RECOURSE FOR THE DEALER

NO DOWN PAYMENT—1 TO 3 YEARS FOR THE CONSUMER

This Finance Plan and complete line of fur-nace and air conditioning equipment makes for immediate profit opportunities. Extensive warehouse stocks in U.S.A. No orders lost because of poor service.

Make liberal commissions and profits now. Write for details.

Address Key 291, "American Artisan," 6 North Michigan, Chicago, Illinois.

ENERGETIC, WIDE-AWAKE MEN WITH established clientele among furnace dealers to sell a line of furnaces which have been leaders in their field for nearly sixty years in Ohio, Indiana, Illinois and Pennsylvania on straight commission basis. Very attractive proposition. Position permanent. Address Key 292, "American Artisan," 6 N. Michigan Ave., Chicago, Illinois.

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STEEL PUTS AIR TO WORK

THE soaring temperatures of the present summer have taught America another lesson—the vital need of "putting air to work." Never before has air conditioning received so much discussion and approval.

Helping to "put air to work" is one of the principal jobs entrusted to Granite City Steel Sheets. Whether the problem (as in the above picture) is the removal of smoke and fumes—or the leading in and distributing of washed, properly conditioned air, Granite City Sheets are ideal. They form easily. The coating is tight; the steel itself is sturdy, excellently made—in regular grade and copperbearing types. For unusual duct requirements, a special soft-forming stock is available at no extra cost.

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GALVANIZED SHEETS STEEL SHEETS PLATES AND TIN PLATE

GRANITE CITY STEEL

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5719 Ellsworth Ave., Dallas
916 Walnut Street, Kansas City
1502 Mariner Tower, Milwaukee
110 South Dearborn Street, Chicago

TIME AND LABOR SAVERS!

You can do Better Work and Save Money by using ALL of these Parker-Kalon Products

Practically every job you do, can be done better . . . in less time and with less labor . . . if you will use these Parker-Kalon Products. Each one meets a definite need, for Parker-Kalon Products are a result of practical experience in sheet metal work. Try them ALL. See how they help to turn out better jobs at a good profit.

Fine Hyro No. O. X. Metal Punch Outfit



Here is the famous No. O. X. Metal Punch, with a full set of 7 punches and dies, in a sturdy steel case. A fine outfit which will save time and labor on every job. It will return its low cost of \$5.90 (F.O.B.N.Y.) many times over. Write for folder which gives full details about both this outfit and the Hyro No. X. X. Combination Bench and Hand Punch.

Cost Cutting Fastening Devices



Insist on genuine Parker-Kalon Hardened Self-tapping Sheet Metal Screws...the easiest, quickest, cheapest means of assembling sheet metal. They always go in easily and hold securely. Heads don't twist off...threads don't strip.

threads don't strip.

Type "A"—the original Sheet Metal Screws. For assembling sheet metal up to 18 gauge. Type "Z"—for fastening to sheet metal from 28 gauge to 6 gauge and to aluminum and die castings, Bakelite, etc.

Hex Head Hardened Self-tapping Cap Screws—for fastening to sheet metal from 24 gauge to 10 gauge, and also to steel plates and structural shapes up to 12 in. thick, or solid brass, bronze, die castings, etc.



for fastening sheet metal to wood. Hold 4 times stronger than ordinary nails. Won't bend, back out or pull out like ordinary nails.

Hardened Masonry Nails-

the easiest, cheapest means of making fastenings to brick, mortar, concrete, etc. In most cases they can be hammered in without drilling.

Shur-Grip Handles for Solder Irons STAY ON

Screw on a Shur-Grip Handle and it will STAY ON. A unique die firmly locked in the handle cuts a thread on stem of iron and holds like a nut on a bolt. Ends the waste of time needed to burn an iron into an or-dinary handle. Won't char or burn as stem of iron does not touch wood in handle, and vent hole through handle keeps it cool. Three sizes for all irons from 11/2 to 12 lbs. Try the Shur-Grip File Handle, too.



ABL



Famous HYRO Damper Controls -with all accessories in a handy package

These two HYRO Damper Controls, long preferred by sheet metal workers, now come in handy "complete set" packages which save the time and bother of getting together all the different parts. Each box contains an UNXLD Damper Quadrant (the standard and best control device), or Dial Damper Regulator (a most efficient yet inexpensive control) with necessary Damper Bearings, correct size Parker-Kalon Sheet Metal Screws for fastening the control to duct; and rivets for attaching Bearings to damper. Your supply house can

furnish them in sizes to meet your needs.



PARKER-KALON CORPORATION, 190 VARICK ST., NEW YORK, N. Y.

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